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U. S. DEPARTMENT OF AGRICULTURE

MISCELLANEOUS CIRCULAR No. 59

COUNTY AGRICULTURAL AGENT WORK

UNDER THE SMITH-LEVER ACT

1914 - 1924

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UNITED STATES DEPARTMENT OF AGRICULTURE

MISCELLANEOUS CIRCULAR NO. 59

WASHINGTON, D. C. MAY, 1926

COUNTY AGRICULTURAL AGENT WORK UNDER THE SMITH-LEVER ACT, 1914 TO 1924

By William A. Lloyd, *in Charge, Western States, Office of Cooperative Extension Work*

ORIGIN OF FARM DEMONSTRATION WORK

The passage of the Smith-Lever Act on May 8, 1914, found county agricultural agent work successfully established. For several years there had been agitation for some form of permanent national legislation providing for vocational education for farm people. Various bills before Congress having this objective were vigorously supported. The American Association of Land-Grant Colleges considered the matter at its annual sessions and made recommendations. The plans varied from proposals for national support of agricultural high schools to Government-supported demonstration farms.

While this agitation was going on a new form of agricultural education was growing up in the Southern States. This was not a preconceived system, but was incident to an effort toward combating the advance of the cotton-boll weevil and to adjusting farming in the South to conditions brought about by the presence of this pest. To adjust the inherited agricultural habits of a population in 15 States and to have this adjustment made as a voluntary act of the people concerned was no mean undertaking.

It was under these circumstances that the principle of farm demonstration had its birth. This idea, the central one of the whole extension philosophy since developed, was not at first accepted as sound. Many persons held tenaciously to the idea that, like the experiment, the demonstration must be under "controlled conditions," that it must be carried out under safeguards to assure its success. The proponents of the "controlled demonstration" farm idea failed to appreciate that it was not the perfection of the demonstration that was desired as much as the willingness of the farmers to accept the lesson illustrated, that the "imperfect demonstration" conducted by a farmer on his own farm had greater teaching value than the perfect demonstrations made on a State or Government supported farm.

The establishment of this principle was the outstanding contribution to agricultural education worked out in the Southern States during the years 1903 to 1914, and the success of this cooperative farm demonstration work influenced Congress to base the Smith-

Lever Act on this sound principle. This is illustrated in the words of Congressman A. F. Lever, chairman of the Agricultural Committee of the House of Representatives, in presenting the bill to Congress:

> This bill provides for the inauguration of cooperative agricultural extension work through field demonstrations, publications, and otherwise, to be carried on in accordance with plans mutually agreed upon by the Secretary of Agriculture and the land-grant colleges receiving the benefits of the first Morrill Act. It carries out to the farm the improved methods and practices of the agricultural colleges, experiment stations, the Department of Agriculture, and the best farmers, and *demonstrates their value under the immediate environment of the farm itself.*
>
> The farmer may read the bulletins and hear the lectures, but unless he is shown that the method proposed for handling his business should, under his own conditions, be better, he will not accept it as against his own, which has provided a living at least for himself and family. It is not sufficient to tell the farmer that his method is not the best. He must be shown best methods. The appeal must be made through his eye. He will quickly accept new principles and practices if their value is demonstrated to him under the environment in which he lives * * *. *The fundamental idea of the system of demonstration or itinerant teaching presupposes the personal contact of the teacher with the person being taught, the participation of the pupil in the actual demonstration of the lesson being taught, and the success of the method proposed.*
>
> The theory of this bill is to extend this system of itinerant teaching, the State always to measure the relative importance of the different lines of activity to be pursued and to determine upon the most important to the entire country, by providing for at least *one trained demonstrator*, or itinerant teacher, *for each agricultural county*, who, in the very nature of things, must give leadership and direction along the lines of rural activity, social, economic, and financial. This teacher, or agent, will become the instrumentality through which the colleges, stations, and Department of Agriculture will speak to those for whom they were organized to serve, with respect to all lines of work engaged in by them. If he is sensible, tactful, and resourceful, he will become readily the leader of thought within the sphere of his activities. One of the most pressing problems in connection with rural life and progress is that of the development of leadership among rural people. This bill supplies this long-felt deficiency, well understood by those who have given the problem serious thought.

ORGANIZATION OF THE COOPERATIVE DEMONSTRATION

A circular issued by the Bureau of Plant Industry on January 30, 1903, entitled "Farmers' cooperative demonstration work, an outline of plans for the work," contains this significant statement:

> The only practical and rational plan for general relief that could be adopted is cooperation. First: Arrange to personally meet the farmers and enroll as many as possible in a general cooperative demonstration in which each farmer agrees to cultivate 10 or 20 acres of cotton under instructions given by the United States Department of Agriculture which have proved to be a success. If the progressive farmers of the State will unite in this cooperative movement, it will influence many hundreds to line up in favor of better methods who might otherwise attempt to make a crop upon the old plan and bring disaster to themselves and others.

This was the first public announcement of the plan to control or fight the advance of the boll weevil, and was signed by S. A. Knapp, special agent of the Bureau of Plant Industry, United States Department of Agriculture, by whom the work was organized.

The first agents with headquarters in the field were appointed in 1904. J. A. Evans, afterwards chief of the Office of Extension Work South and at present assistant chief of the Office of Cooperative Extension Work, and W. F. Proctor were the first men to be selected.

They served a territory along a railway in southern Texas. In 1906 William C. Stallings was appointed county agricultural agent for Smith County, Tex., and served until 1911. He was the first man to be so appointed in the United States (fig. 1).

By 1912 the principle of the cooperative farm demonstration had established itself in the South and a report of its success had spread beyond the cotton territory. Educators in other States who were interested in extension education visited the cotton States and were convinced. A notable example of this was the visit of Thomas Cooper, secretary of the Better-Farming Association of North Dakota, to see the demonstration work at first hand. So convinced was he of the correctness of the principle that he accepted the whole plan in the work he organized in North Dakota in 1912. By 1914, when the Smith-Lever Act was passed, North Dakota had 14 county agricultural agents, or more than any other State outside the Cotton Belt.

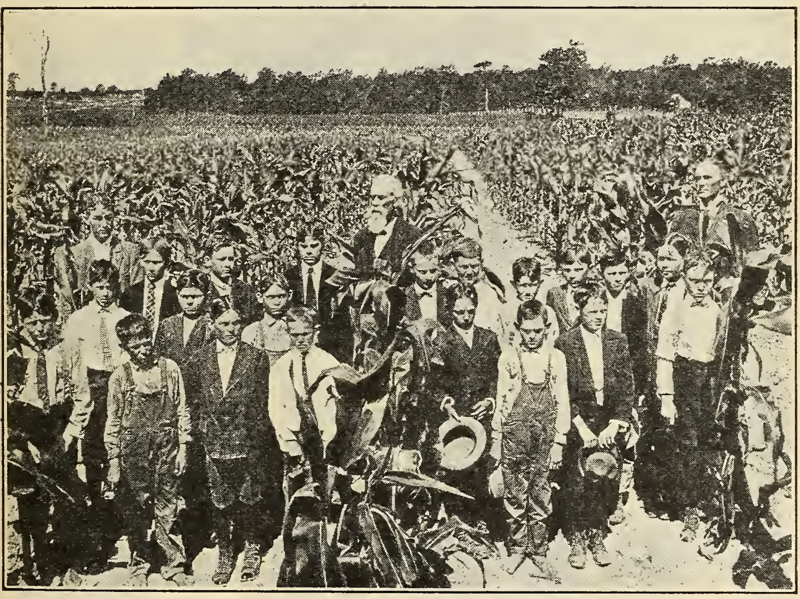

Fig. 1.—William C. Stallings (center), who was appointed in 1906 as the first county agricultural agent in the United States, and W. F. Procter, who was selected in 1904 as one of the first extension workers representing the Federal Government in the field, with one of the first organized boys' corn clubs.

In 1910 an experiment was started in Bedford County, Pa., by the Office of Farm Management of the Bureau of Plant Industry, United States Department of Agriculture, to see if the plan used in the Southern States was applicable under normal conditions in a territory outside of the Cotton Belt. This experiment met with success and resulted in the employment of a permanent agent for Bedford County.

When New York and New Jersey were planning to start extension work W. J. Spillman, of the United States Department of Agriculture, who was familiar with the success of the cooperative farm demonstration work in the South, persuaded the promoters of the work in those States to abandon the demonstration farm idea they had in mind. The same influences affected the organization of "co-operative experiments" in Ohio.

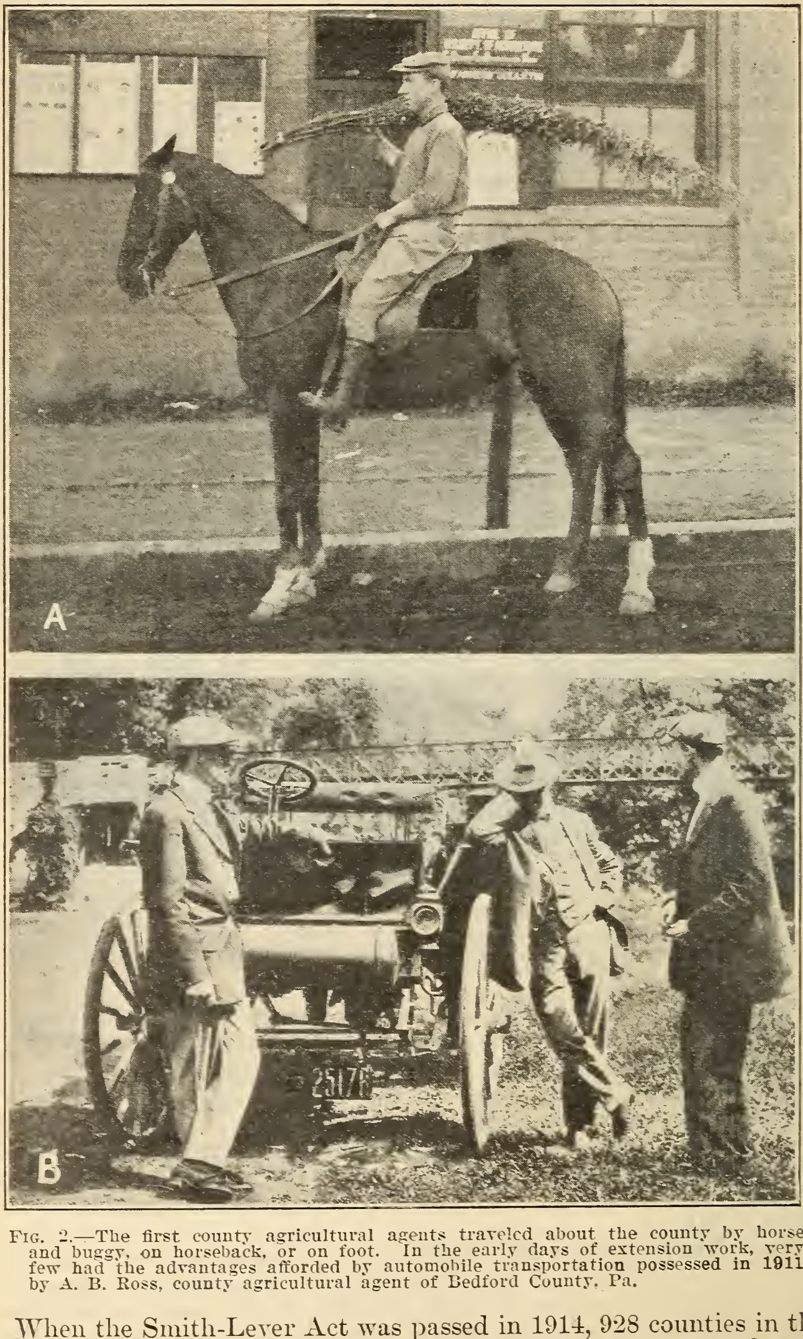

Fig. 2.—The first county agricultural agents traveled about the county by horse and buggy, on horseback, or on foot. In the early days of extension work, very few had the advantages afforded by automobile transportation possessed in 1911 by A. B. Ross, county agricultural agent of Bedford County, Pa.

When the Smith-Lever Act was passed in 1914, 928 counties in the United States had agents, 718 of which were in the cotton States.

Just as the work in the Southern States had been definitely advanced by the philanthropy of the General Education Board, which had also extended its work into Maine and New Hampshire, so a fund established in 1912 by Julius Rosenwald was helpful in getting the work started in several other States. In spite of all this, however, many educators doubted the soundness of the cooperative farm demonstration principle and predicted failure.

THE COUNTY AGRICULTURAL AGENT IN 1914 AND 1924

Ten years is not a long period of time, yet few persons, even among county agricultural agents, have any conception of the changes that even this short time has wrought in the nature of their work. The average period of service of a county agricultural agent in a single county is only about three years. There are only a few whose period of service runs back to the pre-Smith-Lever days. Following is a description in parallel columns of the typical county agricultural agent at the beginning and at the end of the first decade of work under the Smith-Lever Act:

COUNTY AGRICULTURAL AGENT IN 1914

On July 1, 1914, 718 counties in the 15 Southern States and 210 in the remaining States in the North and West had agents. Seven States had no county agricultural agents and only two had a full quota. The average annual salary was less than $1,200, and out of this the county agricultural agent paid his own expenses. He was a mature man about 40 years old, who frequently lived on his own farm, and who devoted about 10 months out of each year to the work. His office was in his own home. He had no stenographer, no typewriter, and wrote his letters and reports in longhand.

He traveled about his county by horse and buggy, on horseback, or even on foot (fig. 2A). He left his home on Monday morning and returned again Saturday night. During the week he followed the road, visiting and talking to farmers, inspecting demonstrations, and arranging for new ones. He lived with the farmers, staying overnight where night overtook him. Often he managed his trip so as to stay with his "key men" or those whose support he desired to win. His day was the farmer's day plus. He helped the farmer to do the evening chores and after hours he talked with the farmer long after the children had been put to bed and while the farm wife dozed by the fire. Often there would be company and a home meeting would be held.

The agent carried improved seed and demonstration equipment with him. He was truly an itinerant

COUNTY AGRICULTURAL AGENT IN 1924

On July 1, 1924, 2,084 counties had agents. All States had county agricultural agents and five States had a full quota. The average salary was $2,700 and the average amount provided for expenses about $1,200 additional.

The average county agricultural agent is an agricultural college graduate with practical farm experience and is about 30 years of age and married. He devotes 12 months to the service. He has a "downtown" office with adequate files, telephone, and office conveniences. He has a stenographer and maintains regular office days to accommodate the increasing number of persons who come to him for advice.

He devotes approximately 60 per cent of his time to the field and 40 per cent to the office. He has an advisory council or group of farmers with whom he develops a program and through whom he arranges his demonstrations.

He travels in an automobile and usually returns home every night—sometimes late (fig. 3). He works less with the individual and more with groups. The extension program is less his program and more an expression of the people's desires in regard to what ought to be done.

He still works long hours and, in spite of modern conveniences, has a job full of hard work. He is still an itinerant teacher, but is more the efficiency agricultural engineer. He still needs to be resourceful and has to meet unusual and unexpected conditions, but his work is better planned.

teacher. He was an outstanding man in the community in which he lived, with the qualities of leadership, broad human sympathy, and the spirit of an apostle. By modern standards his work seems crude and ineffective, but he was a pioneer and, like the pioneer farmer, he met conditions as he found them, and under those conditions and with those handicaps he did a great work and did it well.

He is less a personal apostle with a message and more the representative of the State college of agriculture and the United States Department of Agriculture. He is less an opportunist and more an analyst, who helps the farmer determine what is best, demonstrates better practices, and advertises the results. His advance from the pioneer type has been rapid. It is due partly to mechanical conveniences and organization, partly to better training, but primarily to better understanding and cooperation by the farmers, which are in themselves the best fruits of extension work.

The above description of the county agricultural agent during the two periods is typical, although it may not apply to every agent.

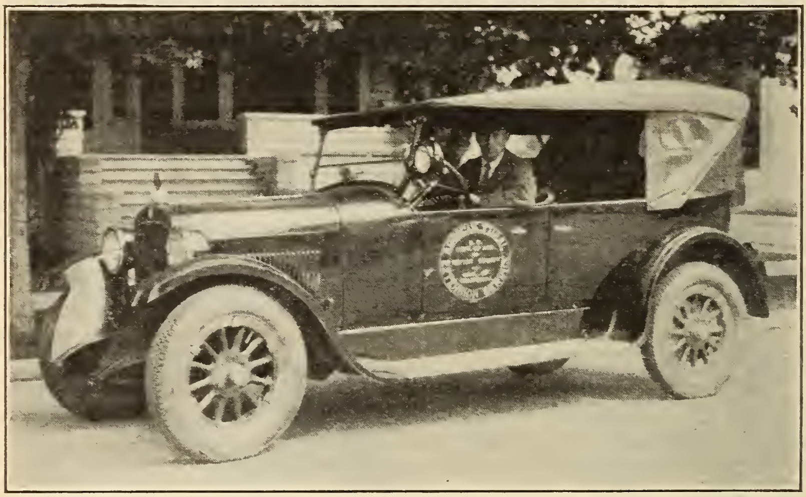

FIG. 3.—The modern method of transportation used by most county agricultural agents. The development of the automobile and of good roads has facilitated materially the growth and spread of the work of the county agricultural agent

For instance, a few college-trained men were in the work in 1914, particularly among the agents in the Northern States where this was practically made a requirement for appointment. Also the average salary was somewhat higher in the Northern States, being at the beginning about $1,800, including allowance for expenses. A few agents in 1914 were also provided with well-equipped offices and an automobile, whereas, even in 1924, a few agents were still not far removed from the pioneer type described.

ORGANIZATION OF WORK UNDER THE SMITH-LEVER ACT

Many persons believe erroneously that the Smith-Lever Act is the parent of the county-agent system. What it did was to provide for the administrative organization and for gradual development of the system. It found the work both in the South and in the North fostered by private philanthropy and provided for placing it on the solid basis of public support. Already there was a beginning of State and county financial support. In Texas, Arkansas, North Carolina, and Virginia every regular county agricultural agent received at least half of his salary from the county. This was also true of most of the newly appointed agents in the Northern States.

The Smith-Lever Act established an orderly system of finance based on Federal, State, and county funds, supplemented by funds contributed by private individuals within the State. Contributions from private organizations outside of the State ceased to be used. The immediate effect of the act was the creation of a uniform system of extension administration in the colleges. Previous to the enactment only a few colleges had any special organizations or funds to develop such work. It was variously administered, sometimes by the State department of agriculture, sometimes by the experiment stations, sometimes by the Federal department direct, and at times even by outside agencies.

Immediately after the passage of the act a general memorandum of understanding was prepared and submitted to the States. This memorandum, prepared by A. C. True, chairman of the States Relations Committee, provided for a uniform plan of administration of the act through a Federal extension organization in the United States Department of Agriculture and in each of the State land-grant colleges. As soon as the various States had accepted the act the memorandum was signed by the Secretary of Agriculture and the presidents of the State land-grant colleges. Extension divisions were created in each State with a director representing both the Federal Department of Agriculture and the State college of agriculture. These divisions had charge of all extension work that either institution would do within the State. The State agreed to cooperate with the United States Department of Agriculture and the department agreed to do all its extension work through the new division. This was a great step forward and made possible the correlation of the teaching of the department and of the State colleges.

In the department the memorandum brought about a centralization of extension work in a single, newly created bureau, the States Relations Service, with a director, A. C. True, in charge. Two Federal extension offices—the Office of Extension Work South and the Office of Extension Work North and West—which previously had been functioning as parts of the Bureau of Plant Industry, were transferred to the States Relations Service.

These offices supervising extension work in different sections of the country were allowed to function separately, because of the nature of the appropriations to the Department of Agriculture. In the Southern States appropriations had been made specifically in relation to the control of the cotton-boll weevil. The organization administering these appropriations had no funds to extend this work outside the weevil-infested area. The work in the Northern States had made a beginning in the Office of Farm Management of the Bureau of Plant Industry, which had set up an organization for handling its work. Although both offices had the same extension philosophy based on the farm demonstration, somewhat different methods of organization and procedure were followed. The two offices were not consolidated until 1921.

The extension organization in the various State colleges, although differing in minor details, for the most part was set up as one of three coordinate administrative divisions of the agricultural college—resident teaching, research, and extension. State supervisory officers, styled variously as State agents or leaders, responsible to the State extension director, were placed in immediate charge of promoting the work and of supervising the field agents.

LEGISLATION

The first legislation in the States, other than the acts of acceptance, was an authorization by the State legislatures to counties to make grants of county public funds toward the support of county extension work. This was as a rule a very simple piece of legislation. Usually it limited the amount of funds that might be employed and in a few cases required some form of local expression by the farmers or the people that they desired the work started, such as a petition signed by a certain percentage of the landowners.

Gradually more complicated legislation was developed in a few of the States, particularly in the Northern States, recognizing certain county organizations as the official cooperating parties. The general purpose of this later legislation was to establish between the State and county organizations essentially the same extension relation as existed between the State college and the United States Department of Agriculture, the administration of the work resting in the State college. These State laws were not uniform and the relationships established varied in degree. In most cases public funds provided by the State appropriation, together with those supplied by county boards, were insufficient to support the work and made necessary the use of the provision in the Smith-Lever Act permitting the use of private funds. Such is the legislative situation at present. The tendency now is toward complete public support and the creation of a strictly public body in the county charged with the responsibility for the administration of extension work somewhat along lines of the county board of education.

FINANCE[1]

One of the benefits brought to county agricultural agent work by the Smith-Lever Act was a permanent system of finance. In 1914–15 the county agricultural agent project cost a total of $1,949,105.27 and in 1923–24 it had increased to $9,999,271.48, or about fivefold. The cost in 1923–24 represents 52.5 per cent of the total extension funds expended for all purposes and is more than the funds provided by the Smith-Lever Act plus the amount appropriated by the States to offset these funds.

With the passage of the Smith-Lever Act the work ceased to be patronized by large philanthropic organizations. Most of the Southern States authorized counties to make grants for the support of county extension work. Similar action in the Northern States followed the passage of the act. Public funds were often supplemented by donations from chambers of commerce. Such organizations frequently contributed office quarters and at times stenographic help for the county agricultural agent. Work in Illinois was started by subscription from the farmers, usually $10 to $15 each. Contributions by farmers or their organizations have continued a source of support in a few of the States, mostly in the Middle West, though the tendency has been toward an increased measure of public support. Of the funds expended during the year 1923–24, 93 per cent came from public sources. Table 5, page 56, shows the expenditure of funds in each State since 1914.

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[1] Funds for extension work are appropriated for fiscal years ending on June 30, whereas extension agents are required to prepare their annual reports for calendar years. For this reason statements regarding funds expended are given for fiscal years and results of work accomplished for calendar years.

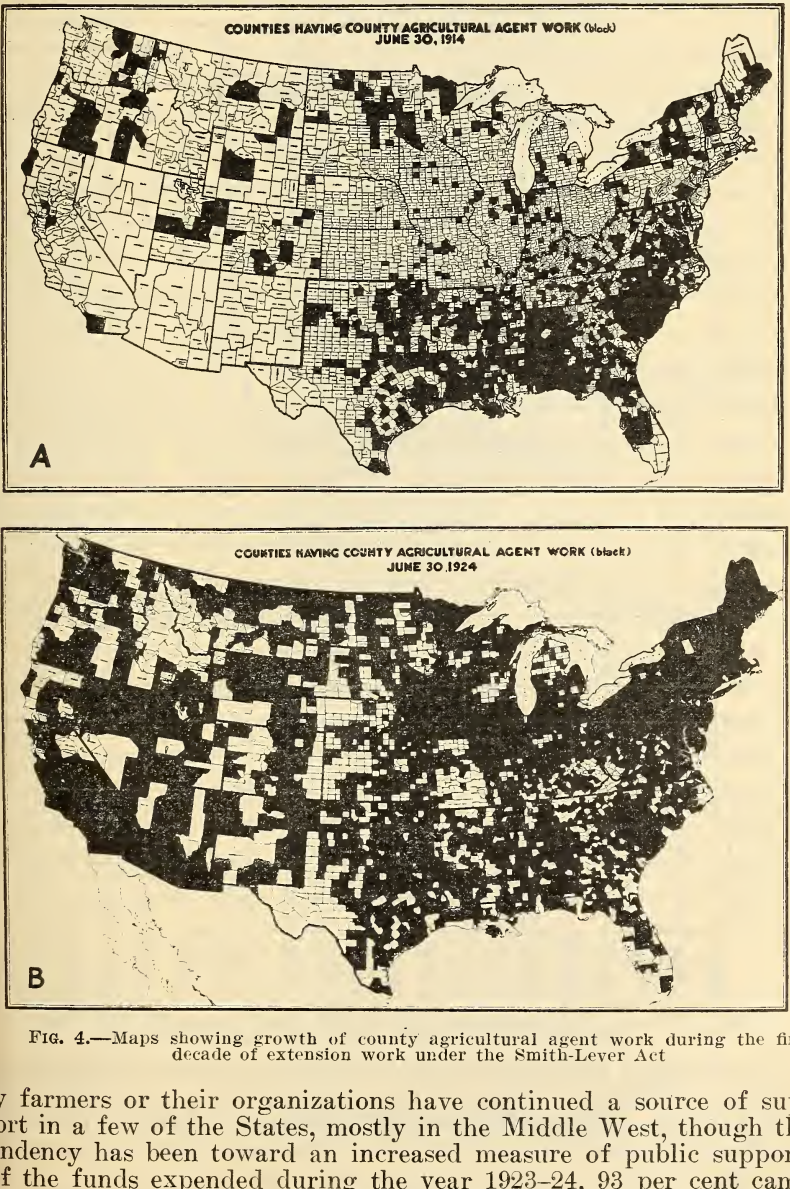
COUNTIES HAVING COUNTY AGRICULTURAL AGENT WORK (black)
JUNE 30, 1914
A
COUNTIES HAVING COUNTY AGRICULTURAL AGENT WORK (black)
JUNE 30, 1924
B

FIG. 4.—Maps showing growth of county agricultural agent work during the first decade of extension work under the Smith-Lever Act

DEVELOPMENT OF PERSONNEL

By 1914 more than half of the counties in the Southern States had county agricultural agents and two of the States had an agent in every agricultural county (fig. 4). From 1914 to 1917 the development was gradual and conservative (fig. 5). The World War brought large emergency appropriations for stimulation of food production and the appointment of county agricultural agents was greatly accelerated. Some of these appointments were temporary and were discontinued following the armistice. Most of the work, however, had been started on a permanent basis and was continued (fig. 6).

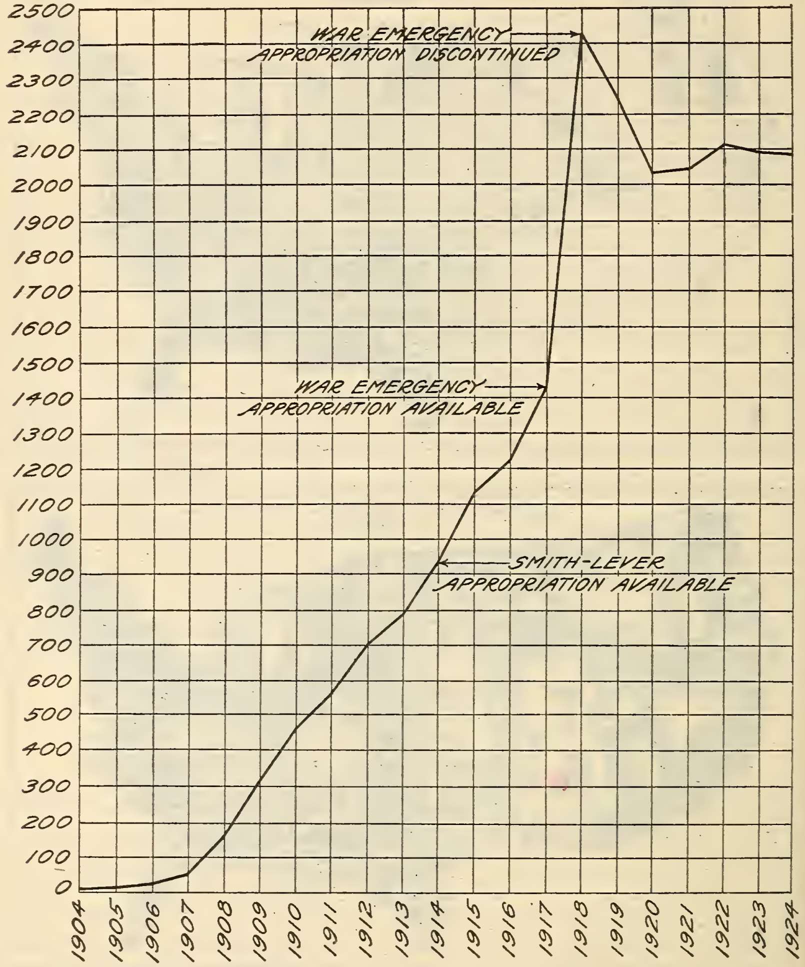

FIG. 5.—Number of counties with men county extension agents, 1904–1924

A few counties maintain assistant county agricultural agents, and 87 were employed in 1924. A few States have county agricultural agents at large, itinerant agents, and agents for unorganized coun-

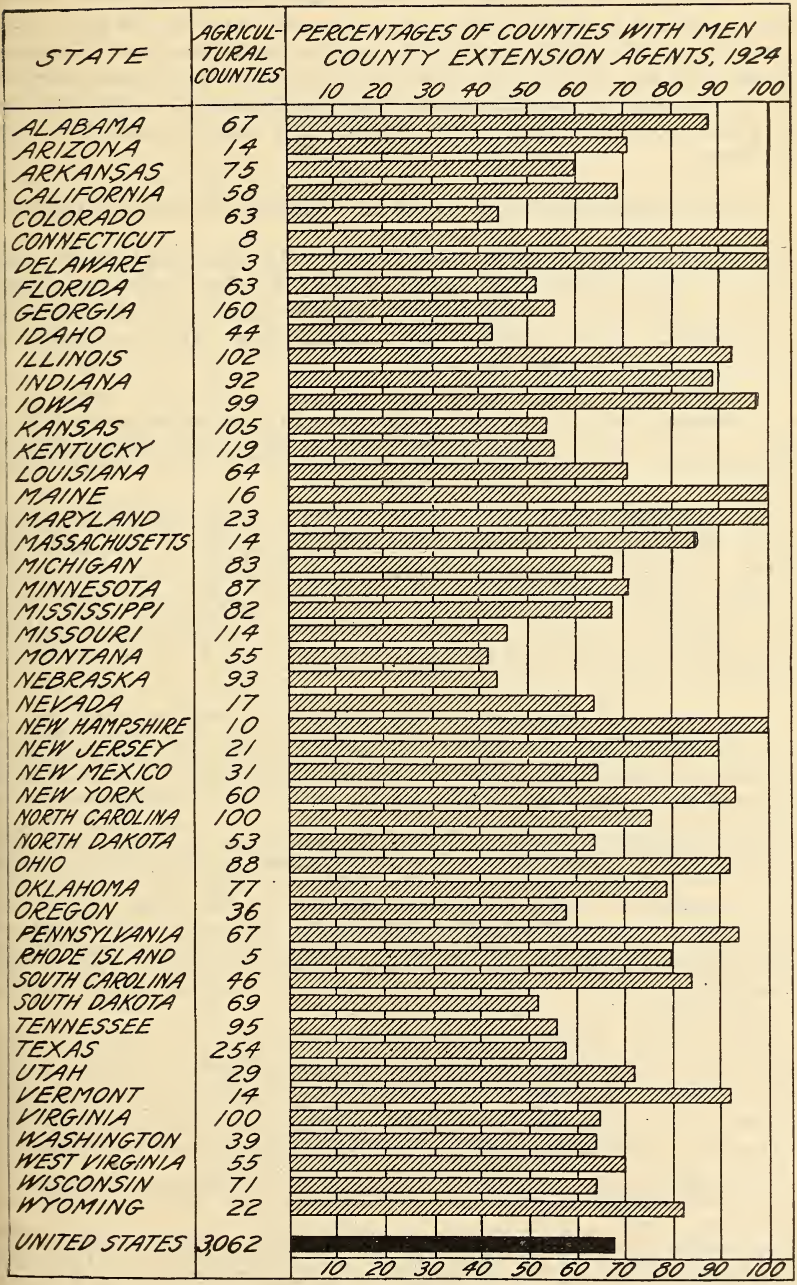

FIG. 6.—The percentage of counties in which each State has employed men county extension agents, 1924

ties. Such agents are used as substitutes in counties where temporary vacancies occur, or as assistant county agricultural agents in emergencies, and are shifted from county to county as occasion may arise. Agents for unorganized counties extend a small amount of demonstration service pending the time when permanent agents may be appointed. A few counties have appointed county subject-matter specialists, particularly in such subjects as dairying, poultry, and citriculture.

SPECIAL TRAINING FOR COUNTY AGRICULTURAL AGENTS

To find men with proper qualifications for the responsible position of county agricultural agent was a problem that confronted Seaman A. Knapp, who was chiefly responsible for the development of the county farm demonstration agent idea. In an address at Lexington, Ky., in 1906, he said:

> The men who act as field agents must be practical farmers. There is no use in sending a carpenter to tell a tailor how to make a coat, even if he is pretty well read up on coats; the tailor won't follow. The farmer must be a recognized leader; progressive, influential, and able to carry public opinion with him.

This describes the type of men that were selected in the early days of 1904 to 1913. By that time it had been found that, although Doctor Knapp's theory of farmer psychology was essentially correct so far as immediate acceptance of the agent was concerned, the "practical farmer" agent had his limitations. Bradford Knapp, who succeeded his father in charge of the work in the South, stated in his annual report of 1913:

> We find that for the first one to three years, and sometimes longer, we can get along with a good, successful, wide-awake farmer who devotes part of his time to this work in the county. Some of these men grow with the work and become our most valuable agents. In some instances after a few years the farmers of the county "catch up" with the agent, and his usefulness wanes, and he loses his influence and leadership.
>
> The agent must be of sufficient age to have sound business sense, must have personality which enables him to meet people successfully, and must actually work with them in a cooperative way. He must have the qualities of a leader; he must be a man of practical experience in farming; and, if possible, he should be educated along agricultural lines. An agricultural college graduate who has had farm experience, and who has the right personality, and attains sufficient age, is the very best sort of material. Men of that preparation and experience and education are not to be had at low salaries, and are hard to find.

Work in the Northern States was started on a higher salary basis than in the Southern States in an attempt to attract better qualified men. The agricultural colleges, with which cooperative relations were established at the outset of the work in the North, emphasized the employment of college-trained men. Graduation from an agricultural college soon came to be insisted upon as a necessary preparation for the work in most States, both in the North and South. The old type of "farmer-agent" was gradually supplanted by men with an agricultural college training, so that now approximately 95 per cent of all the agents in the United States are agricultural college graduates.

The raising of the standard of qualifications has not solved the problem of personnel. Even the much higher salaries necessary to attract the high-class men needed to serve successfully in counties where the work has been under way 6 to 20 years do not hold such men for more than 3 or 4 years. The strenuous nature of the work and the long hours required make it difficult for the agent or his family to be a part of the social life of the town where he resides or of the rural communities where he works. The successful county agricultural agent is in demand in other work with greater social possibilities, larger compensation, and more assurance of permanency. Experience indicates that the solution of these three factors lies at the root of a desirable increase in the average period of service. Grants of funds, particularly those by counties or by private individuals or concerns, are on an annual basis; and, unfortunately, are uncertain; and their availability is not always related to the agent's success. Perhaps the greatest need is a permanent system of finance that will remove the agent's salary from the uncertainty of politics, which at times influences the action of boards of county commissioners. Paying the entire salary from State and Federal funds would greatly tend to do this.

The heavy turnover of county agricultural agents has brought to the agricultural college the responsibility of giving to undergraduates desiring to take up county agricultural agent work some special training that would fit them for such positions. Approximately 600 new agents are required each year to maintain the present service. Several of the State colleges have already developed extension courses. Experience so far seems to justify this venture. The men who have had the advantage of the extension courses have come to the work in the counties with a better understanding of its requirements and have saved from six months to a year in getting adjusted.

Another problem facing supervisory officers concerns the development of some plan whereby the county agricultural agent of three or four years' service and a desire to remain in the work may keep himself informed. It is easy to get into a rut, and even the agriculturally trained college man may find that his farmers have "caught up" and that he is, to use the expression of such an agent, "pumped dry." There is need of getting away from the job and freshening up, of getting more experience and a wider vision. Some States have a system whereby the county agricultural agent is given sabbatical leave on the same terms as other members of the college faculty. In other States he is given a few months' leave after three or more years of service. In either case the leave is to be used in travel or study along some line that will help him in his work and includes the obligation to return to the county at the conclusion of his leave for a period of at least a year. Short summer graduate schools and correspondence courses have been tried out to a limited extent with some promise.

DEVELOPMENT OF COUNTY EXTENSION ORGANIZATION

During the early years of the work the county agricultural agent made his own program and selected his own demonstrators. He visited the demonstrators once a month or oftener and personally checked up on the results. In the Southern States locals of the farmers' union were often used as a means of group contact. Many counties had informal advisory councils or individual conferences with "key men," usually demonstrators, picked by the agent. There was little in the way of formal or special extension organizations in the counties in the South.

A different situation existed in the Northern States, where the work was the outgrowth of organized effort. Soil and crop improvement associations in Illinois and better-farming associations in North Dakota were pioneers in this line. Shortly after starting work in Broome County, N. Y., the subordinate and Pomona granges became interested, as they did in Michigan, Oregon, Washington, and some other States. This farmers' organization was often a useful focal point. In Broome County, N. Y., where work was first started on a cooperative basis, the Binghamton Chamber of Commerce, one of the cooperating parties, had as one of its departments a farm bureau. When the county agricultural agent was appointed he was given an office with the farm bureau in the Chamber of Commerce Building. Some years later an organization of farmers was effected which took the name "County Farm Bureau." This name was adopted in New York, the New England States, and in California to designate the local cooperating farmers.

The county farm bureau was similar, so far as purposes were concerned, to the soil and crop improvement associations, better-farming associations, farm-improvement associations, and the variously styled organizations in other Northern States, all having for the central purpose the bringing together of the friends of the new movement for two purposes—(1) to assist in obtaining local grants of funds from county commissioners and (2) to provide community leaders who would cooperate with county agricultural agents in carrying on the work.

At a meeting of the State county agricultural agent leaders in the Northern and Western States in 1916 it was decided, in order to avoid confusion in reporting, that the term "farm bureau" should be used whenever the cooperating county organization was referred to, regardless of its local name. This action did much to standardize the name of the county organization in the Northern and Western States.

At the same time a movement was going on to standardize the form of these county extension organizations along lines that seemed to give the best results in extension work. Extension workers, national and State, particularly those connected with county agricultural agent work, devoted a large amount of time to building up these county extension organizations or farm bureaus. The nominal membership fee of 50 cents to $1 was often used to provide the county agricultural agent with office help or with some needed extension equipment. The executive committee met in the county agricultural agent's office. In a few States the agent was styled the "manager" of the organization. Some States, particularly in the far West, were slow to adopt the plan of county organization on account of the sparsity of population and the great distances between farms and communities.

With the entrance of the United States into the World War the United States Department of Agriculture strongly urged farmers to organize in order that they might cooperate more effectively in food-production and conservation campaigns. A great wave of organization swept over the country under the leadership of county agricultural agents and State supervisors. At the close of the war nearly 700,000 members were enrolled in county farm bureaus. This great increase in membership was due primarily to the war enthusiasm. Members were not selected, as they had been earlier, on the basis of interest and friendship for extension work. Many of these organizations were known as emergency farm bureaus.

The period of agricultural depression following the war brought much unrest. Several plans were proposed for a national organization of farmers to protect farming interests. One of these efforts resulted in an organization called "The American Farm Bureau Federation." In order to finance the ambitious plans of this new farmers' organization, membership dues in the county farm bureaus were raised from a nominal fee of $1 to $10 or more. Highly organized membership campaigns were put on, based on the desperate condition of the farmers and on the promise of relief. The basic character of the membership was fundamentally changed. To all intents and purposes in many sections of the country the county farm bureau became a new organization with an old name.

There followed a year or two of great confusion both in the minds of leaders of the new movement and in the minds of the extension forces. The new organization had a period of rapid growth. Extension forces found the new membership, which predominated in most of the counties, interested primarily in legislative remedies for the correction of bad economic conditions rather than in extension or educational effort.

Rival national farm organizations protested against patronage of the new movement by the United States Department of Agriculture and by State agricultural colleges. The situation was further complicated by State laws in 12 or more States passed before the organization of the American Farm Bureau Federation, in which the county farm bureau was specifically designated as the legal cooperating agency in extension work. In these States the county farm bureaus were at least quasi-public bodies.

As the economic situation grew worse the spirit of protest increased and the old extension interest of the county organization in many areas waned or disappeared. Gradually an adjustment took place. In 1920 a memorandum of understanding was signed by the director of the States Relations Service and the president of the American Farm Bureau Federation in which it was agreed that the farm bureau as an organization assume full responsibility for the work of the county bureaus, including membership, and that the extension service cooperate with the new organization on the same basis as with other farm organizations.

The process of segregation between extension work and work that is more properly performed by farmers' organizations is still in progress. It is complicated by State laws that need revision and by old associations that are difficult to adjust. Gradually the extension movement is getting back to first principles of educational work, whereby leaders are selected because of their ability to lead and because of their interest in the particular extension project. Informal extension committees and advisory councils are being formed in many States, regardless of membership in any farmers' organization, to assist in program determination and project advancement. Sentiment is crystallizing in favor of a public board or committee elected by the people or appointed by designated authority to look after the public's interest in a purely public work.

PROGRAM DEVELOPMENT

A fairly definite program for the county agricultural agent arose in the Southern States from the very nature of the appropriations which were to meet the condition brought about by the cotton-boll weevil. This condition necessitated providing for (1) methods of raising cotton, the principal cash crop in the South, under weevil conditions, and (2) diversification, or the raising of other crops in rotation to take the place of cotton. This sectional program gave to the work in the South a definite objective and aided materially in the development of local programs. It brought into existence both a center and a community of interest. The work had a purpose which was recognized not only as desirable but as necessary by the people generally.

The first part of the program was not difficult because it meant simply good farming; that is, the doing of those things that should be done in any case to grow a good crop, but which the havoc wrought by the weevil made necessary to grow even a poor crop. The second part of the program presented more difficulties. Although there were markets for certain cash crops, such as cotton, rice, sugar cane, and tobacco, no market existed for the surplus production of the crops needed for diversification. Progress here needed to be slow. Fortunately, this difficulty was anticipated and the people were continually warned against extensive experiments with new crops. Some of the slogans used were: "Grow your own food and feed," "Live at home," "Vegetables and meat for the family," and "Safe farming."

This course proved wise and was needed to counteract well-meant but poor advice of city, corporate, and other agencies which sought to "save the farmer" through widespread diversification. Adherence to the program has resulted in (1) the successful production of cotton under boll weevil conditions and (2) a conservative and progressive diversification.

Although the boll weevil gave southern agents a program, the work quickly expanded to include the whole subject of agricultural advancement. Particular attention was given to (1) soil conservation through terracing; (2) the introduction of legumes, such as lespedeza, velvet beans, cowpeas, soy beans, bur clover, red clover, sweet clover, and alfalfa as hay and pasture crops and for soil improvement; (3) the creation of a favorable attitude toward tick eradication as a necessary preliminary to livestock production; and (4) the introduction of purebreds to improve the common scrub stock. The cotton-boll weevil gave the impetus to all this work and laid the basis for a gradual but fundamental change in southern agriculture. The South has what might be termed a subconscious regional agricultural program, which has been adhered to for 20 years. The States had common objectives and used substantially uniform methods.

In the Northern States such a condition did not exist. Farming was threatened with no calamity. The need for rural awakening was perhaps as great, but there was no great stirring motive for improvement. Outstanding leaders among farmers saw the need of putting farming on a better business basis, but the great mass of farmers in the Northern States were reasonably content and unconcerned by any impending calamity. In other words, county agricultural agent work had to be "sold" to the farmers of the North. If agriculture was decadent and farming sick the farmer was unconscious of the condition and asked for no medicine. The situation was one which could be attacked from a hundred different angles. The first program in Broome County, N. Y., was based on observations made while driving through representative sections of the county, which suggested many things that might improve farming methods. How justifiable these improved practices might be was not so easy to demonstrate.

The demand for the agent in the North was not so pressing as it was in the South. He had not been asked for. Practical farmers frankly asked if the "white-collared young man" knew what he was talking about. The movement, no matter how much it was needed, could not be superimposed. It must be accepted, if at all, as a desired service; hence the need of organizing farmer support, of getting the leaders together, and centering interest on peculiarly local needs. Program development in the Northern States was not regional. It had not the advantage of slogans or a background of widespread public appeal. It proceeded on the basis of the following: (1) What are the difficulties met with in farming in this community? (2) What can be done about it?

It was necessary to obtain a few farmers to assume the responsibility of leadership, to discover good farmers, and to call attention to their success. Attempts were made to analyze the farmer's business and to establish a business basis for a program. Progress was slow, but so-called self-determined community programs became the basis of the work in the Northern States. Such programs were often unscientific, often missed the big need, and centered effort on the incidental, but they were sound in that they obtained the interest and cooperation of the farmer, who in common with other people will only do the things in which he believes. Interest can not be excited in an intangible principle that can not be demonstrated by concrete application.

County-wide programs or goals were developed, but they were usually little more than a combination of the various community programs. The coming of the World War put an end to program making, or rather substituted an artificial program, which provided for maximum production regardless of economic justification. Farmers were urged to produce to the maximum. Pastures were plowed up and the land put in crops to which it was poorly adapted. Production was carried to heights never before attained. Sound rotation practices were scrapped, good farm-management principles were thrown in the discard, and throughout the whole country much of the cumulative influence of extension effort was, at least temporarily, lost.

The agricultural collapse which followed the deflation of prices, the disturbed relation between what the farmer got for his produce and what he paid for his supplies, brought a train of disaster from which farming has not yet recovered. The years since the war have witnessed an overdose of program making. Farmers have been confused by the multiplicity of palliatives, remedies, and restoratives. Thousands of farmers have given up the fight and quit farming. It is difficult under such conditions to get interest in sound remedies. It is hard, for instance, to obtain interest in flock or herd improvement with stock selling far below the cost of production and with the stockmen heavily in debt, even if such conditions do afford an opportunity of getting good breeding stock cheap. The same is true in regard to the use of pure seeds, crop production, or any enterprise calling for the expenditure of money.

The depression, however, has resulted in at least one good thing. It has created an interest in the business side of farming, in cost of production, relation of production to consumptive demand, what to produce, price relationship, distribution, transportation, and marketing costs. The farmer is emerging from the depression a better business man; at least he is thinking more in terms of farming as a business as well as a mode of living, and this has brought a new type of program making in which he is again participating interestedly. He is tired of nostrums and cure-alls and, as never before, he is asking for facts. The new type of program making is therefore proceeding on a basis of the assembly, organization, consideration, and interpretation of the facts upon which a long-time agricultural program might be based.

Fact-organization conferences are being held, at which everything that is known about a subject or commodity is discussed and a course of action mapped out. Program making is no longer strictly a community matter. The war resulted in the farmer's becoming better acquainted with world conditions. He knows now that the price of wheat in the United States is influenced by conditions in other parts of the world and that to be a successful producer he must know conditions not only of soil, fertility, cultural practices, disease and insect control, but also the probable acreage, yield, and demand. During the past two years a few States have appointed fact-organization committees and have held fact-consideration conferences, thus laying the basis for a production program upon which an extension program could be organized. The States of Colorado, Illinois, Montana, North Dakota, Oregon, Virginia, Washington, and West Virginia in particular have made attempts in this direction.

The 11 Western States since 1922 have worked toward the development of a regional agricultural program and a coordinate extension program. These efforts seem to be well considered and in the right direction, but in order to be effective they must reach the county and community. They are resulting in district and county program consideration on the same basis as the State conferences and, best of all, are reviving interest in a community program which is based on a background of facts instead of on a miscellaneous assortment of opinions. The old plan of community self-expression is sound psychologically and practically. The new plan simply provides an opportunity for more correct thinking and more intelligent action.

EXTENSION METHODS

In a general way the Smith-Lever Act determines how the work is to be done. It defines extension work in section 2 as follows:

> That cooperative agricultural extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise. * * *

The act specifies only two methods—field demonstrations and publications—but later it limits the amount that may be spent on publications as follows:

> Not more than 5 per cent of each annual appropriation shall be applied to the printing and distribution of publications.

It specifically prohibits certain forms of extension teaching, as:

> No portion of said money shall be applied directly or indirectly to the purchase, erection, preservation, or management of any college, building, purchase of land, college-course teaching, lectures in colleges, promoting agricultural trains, or any other purpose not specified in the act.

It is evident from the above definition and the limitations imposed by the act itself that the cooperative farm demonstration is the heart of the Smith-Lever Act. Seaman A. Knapp defined the purpose of this demonstration work to be—

> To place a practical object lesson before the farm masses, illustrating the best and most profitable methods of producing the standard farm crops, and to secure such active participation in the demonstration as to prove that the average farmer can produce better results.[2]

Like all great reforms, this demonstration work can not be done *for* the people to be benefited; it must be done *by* them to be effective.

At an annual conference of extension workers of the Northern and Western States in 1915 C. B. Smith, chief of the new Office of Extension Work North and West, said:

> The agent's big field of work is that of a demonstrator. Field meetings on the demonstration plats are an essential part of practically all demonstrational work. Demonstrations are essentially of two kinds:
>
> (1) The kind the agent finds already worked out by the successful farmers when he takes up work in the county. Upon these hinge practically all of his other demonstration work. These give the county agricultural agent a clew to what is right in agriculture in that community.
>
> (2) The kind the agent presents himself and either directly or indirectly supervises. These give the farmers confidence and the agents practical knowledge of agriculture and constitute centers, community meetings, and sources of information.

The demonstration and the demonstration meeting in the communities in furtherance of this great work are important. The goal is to change present to more advantageous practices. The demonstration is based on the belief that there exists a reservoir of knowledge known to the few but not known or practiced by the many. The county agricultural agent's object is to present this knowledge so that it will result in changed practices by the largest possible number of farmers. There are three general methods of approaching this end:

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[2] Bureau of Plant Industry Circular 21, Farmers' Cooperative Demonstration Work in its Relation to Rural Improvement. 1908.

(1) *The spoken word*, which is used in lectures, farmers' institutes, extension schools, short courses, phonographs, and the most recent manifestation—the radio. All of these have some value. They are not the methods particularly emphasized in the Smith-Lever Act.

(2) *Graphic presentation*, which includes news material, bulletin, circular, chart, graph, photograph, lantern slide, exhibit, and the most recent manifestation—the motion picture. All of these are important teaching agencies but they are not the methods emphasized in the Smith-Lever Act.

(3) *Practical demonstration*, or the actual doing of the thing by the persons to be taught. This is the distinguishing feature of Smith-Lever extension teaching. It differs from other teaching in that the person is not told that the method advocated is best, or that it is sound, or what it has accomplished under a given set of conditions. It proves to him under his own vine and fig tree that he can follow the desired practice advantageously. The philosophy of extension methods is to influence the person to do the thing that he ought to do because he thinks he ought to do it. The simple demonstration as conceived by the founders and incorporated in the act has warranted the faith put in it. The farther extension work has departed from this ideal the more complex and intricate the teaching processes have become and the less satisfactory the results have been. Extension teaching is not difficult. It is not obscure pedagogics to be studied in books. It is relatively simple and based on a principle as old as the human race: Learning to do by doing.

Successful demonstrations in the light of extension experience during the past 20 years appear to be based on the following:

(1) Something to be demonstrated. This is presupposed in the enactment of the Smith-Lever Act.

(2) Thorough knowledge on the part of the county agricultural agent of the thing he is demonstrating.

(3) Interested participation in the demonstration by the person who is to be affected by it. The demonstration meeting is a part of the demonstration. Its primary object is not only to show the farmers what has been done but to afford an opportunity for them to participate in the demonstration.

(4) Repetition of the demonstration until at least the majority of those needing its lesson have adopted the improved practice.

In obtaining the approval and adoption of a proposed improved practice by farmers the following is the usual sequence of events: (1) Survey, (2) experiment, (3) test, (4) demonstration, (5) campaign, and (6) follow-up measures.

The county agricultural agent is first concerned with the third of these phases—the test. Here he tries out the truth of the precept established by survey and experiment and ascertains its application to local conditions. The test may be considered as his laboratory in which he personally gives attention to most of the details and personally measures the results. It has its checks and comparisons. Strictly speaking, this should be the work of the experiment station and the best results have been obtained when conducted in cooperation with the station. But often the station has neither men nor funds for such work and the agent is necessarily forced to enter this field. Having tested the application, the demonstration follows as a natural consequence.

The demonstration has two attributes absent from the test: (1) Responsibility for carrying on the demonstration becomes chiefly that of the cooperating farmer, and (2) results are advertised and the attention of the community directed to them.

The campaign is simply organized publicity and its principal function is to multiply the demonstration and thus obtain action by individual farmers in adopting practices.

Follow-up measures are used by the demonstrator in studying the effectiveness of his work. With its use he ascertains the extent to which the practices illustrated have been adopted and the localities where additional work needs to be carried on to influence the majority of the people to practice the lessons illustrated.

The above appear to be the essential principles of extension teaching or cooperative demonstration, and the work has been most successful where they have been most closely adhered to.

Factors that have seemed chiefly to limit success have been:

(1) Lack of simplicity in demonstrations. Demonstrations have been most successful that have taught one thing. More changed practices are obtained from a pruning demonstration than from a demonstration in orchard management.

(2) Too many projects (kinds of demonstrations) conducted at the same time. The best results have followed a single purpose, a drive on one thing, until satisfactory results have been obtained.

(3) Discontinuing a campaign too soon. Interest should not be mistaken for action and the campaign discontinued before the majority of farmers have adopted the practices being taught.

(4) Failure to obtain the interested cooperation of the farmer. He must take part in the demonstration because he believes in it, not to accommodate the agent.

(5) Ineffective publicity resulting from poorly organized demonstration meetings and lack of individual follow-up effort.

As to details, no one set of artifices is best for all conditions. A resourceful county agricultural agent is the best judge of effective methods for getting the message to the people. Extension methods can not be standardized with advantage. They must be adaptable to the character of the community, to its education, prejudices, ideals, and environment. All devices vary in effectiveness under different conditions. In the campaign stage extension teaching becomes primarily good advertising. The local press, the farm press, posters, lantern slides, motion pictures, charts, lectures, radio, and exhibits, all have a place. Their place and effective use are being better understood. They are aids to the demonstration and do not take the place of it.

Extension methods, including the distribution of information through the press, have made great advancement during the past 10 years, because budgets have permitted the purchase of demonstration equipment and illustrative material.

In the prosecution of their work during the 10 years since the enactment of the Smith-Lever Act county agricultural agents have conducted 2,772,600 demonstrations, have made 10,419,671 farm visits, have received office calls by 17,117,152 farmers, and have participated in 862,395 meetings. A total of 1,819,983 extension meetings attended by 79,227,149 persons have been held during these years. County agricultural agents have written 18,767,976 letters in regard to some phase of the work. The work has been carried on chiefly through these agencies—the demonstration, the meeting, and the letter.

INFLUENCE OF COUNTY AGRICULTURAL AGENT WORK

Any attempt to measure the influence of county agricultural agent work is futile. This is true of any form of educational effort. Permanent benefits in agriculture can not be measured in terms of increased yield per acre, quantity of production, better livestock, or improved practices, even if accurate statistical data were available. A variety of influences have been at work. Extension work is only one of many influences affecting farm practice and farm management. The intimate relation of price to both quality and quantity production is of utmost importance. The influence of the farm press and farmers' organizations is exceedingly important. The weather, outbreaks of crop pests, and livestock plagues are interfering factors. All these and other matters would make conclusions based on statistics unreliable if obtainable. It is therefore not serious that the Federal census data do not materially lend themselves to this study. Extension work has been an experiment without guides or precedents. It has had to blaze a new trail. As has been indicated, except in a few instances which will be treated later, there have not been clear-cut objectives with continuous emphasis over even the 10-year period, which is far too short a time to determine if influences are permanent or to measure them accurately.

Agricultural programs and extension programs have been mostly local, usually on a community basis. Only recently have State and regional objectives been tentatively established. The county agricultural agent had to do the thing of immediate interest instead of preparing for future results which might have been more advisable. The farmer's attitude and interested cooperation had to be considered. An autocratic, overhead program of compulsion, no matter how right it may be, is not possible in individualistic America. The possible as well as the desirable must be considered, and if progress is to be made the possible undertaken first. Local programs have been diffuse, promiscuous, and transitory to the point of criticism from a retrospective point of view, but usually they have been the only possible programs from the standpoint of period of operation. Even if long-time objectives could have been established in 1914, the eventualities of the World War and its aftermath could not have been foreseen by the wisest, and that calamity would have destroyed the usefulness of any large plans conceived at that time.

Extension work can not be measured in terms of number of demonstrations held, persons attending, farm visits made, office calls, field meetings, and the like. These may be measures of effort but they are not measures of accomplishment. Extension records or reports lack uniformity. The report forms have been changed frequently, following the evolution of the expanding and changing extension system and organization. Changes in personnel both in leadership and in the county agricultural agents have been frequent.

The following attempt to designate major extension influences must be accepted with the above background. The statistical data when used apply to the period from 1914 to 1923, inclusive, except when otherwise indicated, and are summaries of items from the annual reports of white county agricultural agents, concerning which data have been collected on a reasonably uniform basis. This statistical information is only included as an indication of cumulative effort along a few lines. It has little relation to extent of influence. Statements as to major influences are given in general terms and are a reflection of the opinions of State extension directors and county agricultural agents who have been long identified with the development of the work. Table 6, page 58, gives the statistical results for 1924, and includes the work of white and negro county agricultural agents.

MAJOR INFLUENCES IN CROP PRODUCTION

In a country of such vast extent as the United States, with such a wide variation of crop adaptation and production due to differences in such factors as altitude, latitude, climate, weather, soil, distribution of population, and availability of markets there are few, if any, crop projects that immediately affect all of the States. At most these influences are regional. The far greater part of them are of State or county or even community application. Almost every crop, exclusive of those peculiar to the Tropics, is produced somewhere in the United States. In one way or another most of the crops produced have been the subject of extension effort. The crop projects run into the thousands. They have application all the way from cucumbers to corn. Corn is the most nearly universal crop, being grown in every State. The production of cucumbers affects only a very few communities, and yet where grown may be a more important matter of extension attention than corn. In connection with corn alone the number of projects or points of attack exceed a hundred and include such important matters as the following:

(1) Introduction of corn into certain States and localities.
(2) Variety tests.
(3) Variety adaptation.
(4) Place in rotation system.
(5) Seed selection.
(6) Care of seed.
(7) Germination tests.
(8) Time of planting.
(9) Methods of planting.
(10) Preparation of soil.
(11) Fertilizing.
(12) Cultivation.
(13) Thinning and replanting.
(14) Methods of harvesting.
(15) Storing of grain.
(16) Storing of fodder.
(17) Ensiling.
(18) Place of corn in rotation.
(19) Disease control.
(20) Insect control.
(21) Protection from rodents.
(22) Protection from birds.
(23) Use of frosted or immature corn.
(24) Hogging down corn.
(25) Feeding.
(26) Marketing.

The above are major projects only. Many of those mentioned are multiplied and subdivided into six or more subprojects, as the demonstration work of the county agricultural agents is directed to the matter of immediate or local needs only. It is therefore evident that no satisfactory national summary incident to crop production is possible, and none is attempted here. What is attempted is a statement of a few major influences of regional importance which are typical as examples of the work. Many of the crops worked with do not enter into any collection of statistical information, either State or national. Only those familiar with the conditions existing at the beginning of extension work can now have any adequate comprehension of the changes that have taken place.

COTTON

In the evolution of the county agricultural agent the cotton-boll weevil takes place as his immediate antecedent. The devastation due to the first appearance of the weevil in southwest Texas about 1900 was so great that it was freely predicted that cotton production in the Southern States would be completely extinguished if the weevil were not checked. This was a matter of grave national concern, not only to cotton farmers but to the cotton-mill industry of the country and the world. The situation was more demoralizing than an outbreak of the foot-and-mouth plague to the livestock industry, because no way of stopping the advance or limiting the damage due to the weevil was known.

Early attempts to control the weevil proved ineffective. The weevil advanced steadily about 25 miles per year. By 1904 certain information had been collected regarding the life cycle and habits of the weevil. The first extension effort was an attempt to reduce the numbers of the weevil by a direct attack. This consisted in burning cotton stalks early in the fall and picking the punctured squares in the early summer. When diligently done these practices were effective and are still used. Various control agencies and remedies have been used with a greater or less degree of success during the 20 years, particularly night poisoning and the application of poisons from airplanes during the past two or three years. In spite of all control agencies, however, the weevil has reached the northern limit of the Cotton Belt proper.

It soon developed that the fight on the weevil was not one of extermination but rather of adapting agricultural practices to the raising of cotton under boll-weevil conditions. Although a fair crop of cotton could be obtained under conditions as they existed before the advent of the weevil by the inefficient methods in common use, to do so with the pest present meant an added partner in the share system. The yield must be increased so that after the weevil took its share a profitable crop would still remain for the planter and the tenant. Good cultural methods, deep plowing, thorough cultivation, use of fertilizers, use of good seed, rotation, use of legumes, all of which would have paid big dividends under normal conditions, became necessary with the advent of the weevil. By following such practices the planter could feed the weevil and often still have for himself a much larger share than if the crop had been grown under the old methods. The county agricultural agent was developed as a necessity incident to effectively carrying on such demonstrations. He visited demonstrating farmers at least once a month and as far as possible saw that the "Government plan" was followed.

The story of the 20-year boll-weevil war is an epic in American agriculture. Year by year the weevil advanced and year by year both before and behind the lines the county agricultural agent carried on the fight. The story can not be told here. The weevil occupied the territory completely and apparently permanently, but the county agricultural agent turned defeat into victory. The cotton industry was not destroyed. Acreage and production are increasing. Cotton is still the basis of southern agriculture.

During the 10 years county agricultural agents in the cotton States conducted 58,820 demonstrations, involving 1,428,819 acres, or an average of nearly 6,000 demonstrations per year, with an average demonstration area of more than 140,000 acres. The average yield of seed cotton on the demonstration farms has been 994 pounds, or 331 pounds of lint cotton. It is interesting to compare this with the average yield of cotton in the United States before and during the fight on the weevil.

TABLE 1.—*Average yield of lint cotton in the United States compared with average yield on demonstration farms*

Period	Yield per acre
Average for United States:	*Pounds*
1893 to 1904	185.48
1905 to 1913	187.46
1914 to 1923	159.1
Average for demonstration farms, 1915 to 1921 [1]	331

[1] Data are available for these years only.

These figures indicate that through improved methods introduced by county agricultural agents damage due to the weevil and to natural soil deterioration was overcome in the period from 1905 to 1913. There has been an average decrease in yield of 26.38 pounds per acre in the last decade over preweevil years. This is almost wholly due to the low yields of 1921, 1922, and 1923, caused primarily by the decreased use of fertilizers owing to high prices. Many farmers during these years attempted to grow cotton without fertilizers. High fertilization has been an important part of the methods of growing cotton under weevil conditions. With this exception the county agricultural agent has maintained the preweevil yield during the second decade of the fight, during which time the weevil covered the largest area in point of acreage of cotton involved.

The damage due to the weevil varies from year to year, owing chiefly to climatic conditions. This variation, according to figures collected by the Bureau of Agricultural Economics, is from 6 to 31 per cent. During the past 10 years the average was 14.74 per cent. This and natural soil deterioration are handicaps farmers in the Cotton Belt have overcome under the guidance of county agricultural agents. The yield of cotton in the Southern States is still far below its economic possibilities, as is indicated by the yields on the demonstration areas, which are more than twice the average farm yield.

Another of the great benefits that have come from cotton demonstration work has been the standardization of varieties. This has been accomplished largely through cooperation of the cotton ginner. Arrangements have been made whereby the ginner will accept only cotton of approved varieties for ginning, thus establishing an assured source of pure seed. County agricultural agents in Arizona, New Mexico, and California have assisted materially in the introduction of cotton growing in certain counties in those States, and particularly in variety standardization in the Salt River Valley in Arizona.

CORN

Corn is "king," not only in number of acres and value of crop but in distribution, as it is grown in every State, and in the great majority of counties; and, year by year, it is being grown in new territory. As has been previously mentioned corn projects have been numerous, and their local influence has been great. Only two phases of corn work will be mentioned, both of which are of regional importance.

(1) *Expansion of the corn area in the 11 Western States.*[3]—In 1914 these 11 States had a total corn acreage of only 793,000 acres. This had increased by 1923 to 2,637,000 acres. In certain of the States the increase was even more spectacular. In Montana it had increased from 50,000 to 365,000 acres; in Wyoming, from 25,000 to 150,000 acres; and in Colorado, from 462,000 to 1,490,000 acres.

Ten years ago the typical farmer in most localities in these States believed corn was not adapted to western conditions. This belief was based on the failure that had attended the planting of seed corn brought by the settlers from the Eastern States. The native or "squaw" corn produced by the Indians growing only 18 inches to 2 feet in height was the subject of ridicule. Gradually experiment stations and cooperative tests proved that corn of certain varieties could be produced. Early maturing strains were obtained from Minnesota and selections were made from the "squaw" corn. These varieties were tried by county agricultural agents in corn-variety tests. Seed plats were established of the best-yielding and early maturing varieties. Meetings were held in demonstration fields. As local sources of adapted seed became available the number of farmers growing corn rapidly increased and corn became an incident and in many cases the basis of crop production on western farms. The great variations in rainfall, length of season, altitude, and soil made varietal adaptation a matter of great local importance. Often two or three varieties had to be found to suit the different conditions within a single county. An infinite number of variety tests was necessary, but the success of this form of extension is told in the statistics quoted. Such results could not have been obtained in so short a time and over so wide an area without the leadership and constant encouragement of county agricultural agents.

In 1924, while riding with a county agricultural agent in Colorado, the writer paused on the top of a little hill to enjoy the beautiful scene of the valley below. In reply to the question "What have been the big influences of extension work on the farmers in that valley during the eight years since the work was established?" the agent said: "You see all those silos; there are more than 100 in the valley. You see those cornfields; there are thousands of acres. Ten years ago there was not a silo in the county and not a cornfield in that valley." The introduction of corn made dairying and livestock feeding possible. The whole system of farming had been changed. What was true of this community could be said with equal truth of many communities in every western State. It would be difficult to overestimate the importance of the introduction of such a crop as corn in western agriculture. It has meant ability to feed and finish some of the livestock at home; it has made rotation possible; it has conserved soil fertility; and it has made drought insurance possible by providing a feed crop which could be stored in the year of plenty against the year of possible crop failure.

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[3] Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

(2) *Seed-corn selection and testing.*—This is another important phase of corn demonstrations (fig. 7). Often this work is done through a campaign. Especially noteworthy was the situation in 1918. In 1917 a wet fall and early frost followed by warm weather caught much of the corn immature in the Northern and Western States. The situation was peculiarly acute in Indiana, Illinois, Iowa, North Dakota, South Dakota, Minnesota, Wisconsin, and Michigan. The northern part of the Corn Belt was practically devoid of corn that could be used for seed. To meet these unusual conditions many county agricultural agents arranged special testing stations at which corn was tested for all farmers on request. Surplus seed of good quality was conserved and made available to farmers who had none.

In the fall of 1917 county agricultural agents in the Northern and Western States obtained the field selection of seed on 63,813 farms, which provided seed for planting 3,466,986 acres in 1918. Through testing campaigns in the spring of 1918, 547,779 farmers tested seed corn for germination and provided seed for 10,605,894 additional acres. From other sources, principally New Jersey, Pennsylvania, and Connecticut, 1,232,099 bushels of seed were obtained for 222,123 farmers. Not only was the situation saved but 500,000 additional acres of corn were planted in the spring of 1918, resulting in an increased production of 12,820,300 bushels. To a degree the war emergency contributed to this great effort by giving impetus to the drive which perhaps would have been more difficult under normal conditions. But it illustrates how the presence of the local county agricultural agent in the face of a great emergency makes possible a concerted. organized campaign to a definite end.

However, the results of the campaign were even more far-reaching. Seed-corn selection and germination testing had been standard projects in the Northern and Western States for several years with perhaps a nominal amount of influence. Testing seed, however, had not become common. The unusual situation in 1918, the concerted seed-corn testing campaign, and the success which attended it made farmers realize not only the value but the necessity of good germination in seed. Seed testing has become a recognized part of corn production on perhaps the majority of farms in the Corn Belt. For this reason many of the States feel it is no longer necessary to give special emphasis to seed-corn testing as an extension project. This is indicated by the decline from 547,779 farmers in the Northern and Western States who were influenced to test seed grown for germination in 1918 to 36,133 farmers in the 48 States in 1923. This rise, climax, and decline is characteristic of all well-organized work.

During the 10 years 1,144,957 farmers have adopted improved cultural practices in corn growing directly due to the work of the county agricultural agent.

WHEAT, OATS, RYE, AND BARLEY

Extension work relating to wheat, oats, rye, and barley has covered a wide range of projects. Demonstrations showing the effect of seeding in various latitudes, particularly in relation to the fly-free date for wheat, have been important, as have also tests through which outstanding varieties or strains have been standardized for

FIG. 7.—A farmer field-selecting his seed corn. In 1918, after much of the 1917 corn crop had been ruined in the North Central States, county agricultural agents through strenuous efforts in setting up special seed-testing stations, conducting demonstrations, carrying on campaigns, and importing seed from States in other sections of the country provided tested seed in sufficient quantity not only to save the situation but to greatly increase the production. During the 10 years, 1,144,957 farmers in the United States have adopted improved cultural practices in corn growing directly due to the work of the county agricultural agents

particular localities. The importance of this varietal standardization work can hardly be overestimated. Before it was undertaken by the extension service a pure variety of grain in the farming districts was rare. Hundreds of so-called varieties were being grown, usually from 10 to 20 in each community. The usual system of threshing the grain tended to destroy the purity of seed after the first year and, although varietal names were used, they indicated little more than the predominant grain in the mixture. Under these conditions little progress of any kind was possible. Varietal standardization lay at the basis of all efforts for improvement. For this reason variety tests were established by county agricultural agents trying out side by side various local "varieties" with a few strips sown with pure seed that had given good results at the experiment station. As a result of these tests, field demonstrations, and campaigns, and through the establishment of reliable sources of seed, whole communities or regions have discarded the old mixtures and are growing one approved variety particularly adapted to local conditions. This makes possible grading and uniform handling and management, which are necessary for successful cooperative marketing.

Next in importance to varietal standardization has been the control of grain smut. About 1890 J. C. Arthur, of the Purdue University Agricultural Experiment Station, discovered the value of formaldehyde treatment in the control of oat smut. After 25 years few farmers in the oat belt practiced this treatment. In Benton County, Ind., the county adjoining the experiment station, the first county agricultural agent to take up the work could not find a single farmer treating his seed oats. This county produces from 80,000 to 90,000 acres of oats annually. A few years after the county agricultural agent was appointed more than half of the farmers treated their oats for smut. A similar condition existed in Illinois and Iowa and throughout the oat belt. This was an important part of the demonstration work of agents from 1914 until about 1919. Since then the attention given this project has decreased, as farmers now are very generally practicing the prescribed treatment.

The same may be said of the treatment of seed wheat for smut, except that this project started about five years later and is now in what might be termed the campaign stage in the Pacific Northwest States, where wheat smut has been a most troublesome factor. The following account of the development of this project in the State of Washington is typical of a well-organized extension project.

CONTROL OF GRAIN SMUT IN WASHINGTON

During 1924 the smut project in Washington was put on a campaign basis, and seed for more than 1,500,000 acres of wheat was treated with copper carbonate. Records show that during the fall of 1924 and spring of 1925 approximately 1,875,000 acres will be treated with copper carbonate. Seed for 4,000,000 acres has been treated since 1917.

Extension work in the control of cereal diseases was begun in the fall of 1917 through funds provided by the Office of Cereal Investigations of the United States Department of Agriculture from emergency appropriations. During 1919 and 1920 half of the funds were provided by the Office of Cereal Investigations and half by the extension service of the State college of agriculture, and since 1920 this has been a full-time extension project in Washington.

In 1917 and 1918 approximately 2,494,160 acres of wheat were grown in the State, which under normal conditions yielded 41,837,909 bushels. Smut was a paramount drawback in that it caused an annual loss of about 4,900,000 bushels. Although all farmers were treating their seed, they still had smut due to the existence of a soil infection in eastern Washington which counteracts the seed treatment. The formaldehyde treatment then commonly used by the farmers in central Washington was killing about 25 per cent of their seed wheat, and in eastern Washington, where smut was a bigger factor, about 50 per cent was being killed. The farmers were losing annually in the neighborhod of 623,540 bushels of seed wheat because of injury from seed treatment.

The problem was twofold. It was necessary to reduce the amount of smut and to prevent seed injury. During the years 1919 and 1920 demonstrations were established in five counties to show that seed injury could be eliminated by the use of a milk-of-lime solution. It was recommended that, after the seed wheat had been dipped in either formaldehyde or bluestone, it should be immersed in the milk-of-lime solution. The results of these demonstrations showed that this method of seed treatment reduced seed injury about 90 per cent and also that the plants were stronger and more vigorous. Following these demonstrations in 1920 the seed wheat had been limed for sowing more than 633,000 acres.

In 1920 copper carbonate came to the attention of the extension service, and in the fall of 1920 and the spring of 1921 ten 1-acre demonstration plats were established in Franklin County to demonstrate that copper carbonate would effectively control smut and at the same time eliminate seed injury. These demonstrations were so successful that in the spring of 1922 seed wheat for sowing more than 10,000 acres was treated with copper carbonate. Even the 10,000 acres were on a demonstrational basis. However, the work during 1922 showed that copper carbonate would not entirely eliminate smut, but that fields sown with seed treated with it showed a better stand of wheat, with no seed injury, no winter injury, and less smut than those sown with seed treated with other fungicides. It was also found that it was necessary to increase the quantity of copper carbonate from 2 to 3 ounces per bushel. This work proved so popular that during the crop year of 1923 seed wheat for sowing more than 743,000 acres was treated with copper carbonate. Field records were again taken which verified the results of the two previous years.

The practice of using copper carbonate became so widespread that it was necessary to introduce some kind of machine for applying the powder, and to meet this demand the State experiment station published a bulletin which described a machine that would successfully apply copper-carbonate powder to the wheat. Following its publication three commercial concerns put on the market machines patterned after the one described. These commercial machines have been so perfected that the free dust in the air, which at first caused many farmers to become ill, has been entirely eliminated.

INTRODUCTION OF NEW WHEAT VARIETIES

In 1914 the Kansas Agricultural Experiment Station began the distribution of Kanred, a Crimean variety of wheat, which had been developed by years of careful head selection and breeding. This variety has high yielding power, milling qualities, and rust resistance, and is even hardier than Turkey, the standard hard red winter wheat. Its distribution was primarily through county agricultural agents. In 1918 a survey showed that 80 per cent of the total acreage of Kanred was grown in the 42 counties with extension agents. Since that time the good reputation of this wheat has caused it to be grown in other counties. In 1924, 4,000,000 acres were grown in the State, or nearly half of the total winter-wheat acreage. To the introduction of this new wheat by the extension agents is attributed the present trend upward in the yield per acre in more than half of the counties of the State. In the spring-wheat States the acreage of Marquis wheat has been similarly increased in Minnesota from 5 per cent of the total crop in 1914 to 72 per cent in 1920; in North Dakota, from 5 per cent in 1914 to 46.7 per cent in 1920; and in South Dakota from 3 per cent in 1914 to 62 per cent in 1920. The county agricultural agent provides a ready means for the introduction and promotion of new and proved varieties.

ALFALFA AND SWEET CLOVER

Alfalfa was introduced into America in colonial times. General Washington experimented with it at Mount Vernon. Notwithstanding this early introduction, it is safe to say that in 1900 the typical farmer in the East had not even heard of the crop. It was grown primarily under irrigation in the Western States and to a limited extent in Kansas and Nebraska. About the beginning of the twentieth century various agencies, particularly the farm press and farmers' institutes, gave the crop widespread publicity. There were veritable alfalfa apostles in many States and extravagant claims were made for the crop. It was called a wonder crop that would grow anywhere without particular effort. It was stated that it "could be sowed on the poorest soil, the wind would harrow it in, and three months later a continuous process of harvesting would begin." Such exaggeration resulted in much disappointment. Most farmers failed in their first attempts with the crop. The experiment stations had little to offer in the way of established facts.

By 1910 the requirements of the crop were better understood and a revival of interest took place on a sounder basis. With the experience and accumulation of scientific data, county agricultural agents began alfalfa demonstration work in the central, eastern, and southern portions of the United States, which showed the limiting factors in its production under various conditions. Once these were understood and practiced, the results were so successful that the acreage was rapidly increased. Demonstration work covered a wide range of projects, particularly the following: The effect of lime, inoculation, drainage requirements, varietal tests, time of seeding, effect of nurse crop, preparation of seed bed, control of weeds, and harvesting.

As alfalfa was a new crop to the farmers, the demonstration often had to take the nature of experiments and tests. The price of success seemed rather high in comparison with the primrose path to affluence painted by some of the early enthusiasts. But the crop proved so valuable that it was under many conditions well worth the cost of meeting the requirements. It has found a home in every State and now has a wide adaptation in both the South and Middle West. In 1924 practically 10,450,000 acres of alfalfa were grown in the United States. Extension work has been a strong agency in the development of this valuable forage crop.

Sweet clover is the American cousin of alfalfa. Ten years ago it was commonly considered as a wayside weed and was a nuisance in most localities. Its only recognized economic importance was as a bee pasture. In a few localities, principally in the hill countries of northern Kentucky and the lime belt of Alabama and Mississippi, it was grown to a limited extent as a hay crop and for pasture. In 1912 the Ohio Agricultural Experiment Station issued a bulletin which summarized available information regarding the plant. Many isolated instances were found of farmers growing it under varying conditions and for a variety of purposes. Especially it appeared to have great value as a soil builder and a legume crop under unusually adverse conditions. County agricultural agents were encouraged to try it. Many did so protestingly, fearing to incur the ridicule of farmers. However, many of the tests were successful. Here and there a farmer was found who had used the wild sweet clover, and his experience was utilized in the campaign.

The information was passed on from one agent to another at State meetings and from one State to another at national extension meetings and through printed reports. The number of demonstrations increased and the attitude of farmers toward the plant changed. At first the only seed available was that harvested from wild patches along highways and railroads. A demand for seed was established. Farmers found it profitable to produce the crop for seed alone. Experiment stations began to experiment with the crop and to publish their results. Plant breeders turned their attention to the crop. Its feeding value was established and its cultural requirements ascertained. Seed houses began extensive advertising campaigns. After 10 years the weed that had been growing unnoticed or despised for more than 100 years took its place as a standard forage crop.

National statistics of the extent of acreage are not available, but it is known to be large and rapidly increasing. In Nebraska the acreage in 1923 was reported to be 125,000 acres, or double that of 1922. In Ohio less than 100 acres of sweet clover was produced in 1914. In 1924 the area in this crop had increased to 150,000 acres. Similar progress had been made in Illinois, Iowa, and other States. The economic importance of this recently despised weed is indicated by a report of the Kansas extension service regarding a farmer near Parsons who sowed 25 acres of sweet clover in the spring of 1924 with oats as a nurse crop. In May, 85 head of dairy stock were turned in and the sweet clover afforded an abundance of pasture until late in the fall.

Sweet clover is proving successful for pasture, hay, silage, cover, seed, and as a green-manuring crop. Perhaps sweet clover might ultimately have lived down its bad name and found a place without the work of the county agricultural agent, but it could not have been accomplished as quickly. The rapid development of this crop is illustrative of the value of the local agent in spreading information of successful farm practice. In all, a total of 88,395 farmers have been reported as growing sweet clover under direction of county agricultural agents. The demonstration area alone amounted to 155,263 acres.

SUMMER LEGUMES

One of the chief objections to single-crop farming is the rapid soil deterioration that accompanies it under ordinary conditions. This is especially to be observed in the cotton States of the South and in the wheat States of the Northwest. In the Southern States, where this practice has been of long duration, its serious consequences have been most disastrous. Incident to the new farming methods, the use of annual or summer legumes was urged for planting in rotation with cotton. The use of a legume crop for this purpose was especially desirable because of the large nitrogen requirement of the cotton crop and the heavy expense of keeping up the supply of this element by the use of commercial fertilizers. The cowpea was the legume principally grown, and to a less degree, the soybean and lespedeza or Japan clover in the South Atlantic and Gulf Coast States. Other annual legumes adapted to this area are crimson clover, velvet beans, bur clover, and peanuts. Much emphasis has been put on the production of these leguminous crops, and the acreage devoted to them has been enormously increased. Table 2 is indicative of the extension effort and the known spread of influence during the past 10 years in the Southern States where this work has been chiefly carried on. In the Northern States 185,031 farms produced soybeans and 9,812 farms produced cowpeas following methods advocated by county agricultural agents.

TABLE 2.—*Results of extension work with summer legumes in the Southern States, 1914 to 1923, inclusive*

Name of crop	Number of demonstrations	Acres in demonstration area	Farmers following improved practices
Lespedeza	6, 560	130, 244	33, 637
Bur clover	2, 601	15, 164	10, 252
Crimson clover	12, 119	214, 541	56, 587
Velvet beans	33, 022	856, 441	192, 473
Soybeans	46, 213	393, 442	314, 431
Cowpeas	30, 721	729, 218	222, 468

PROTECTION OF CROPS FROM RODENT PESTS

In the Great Plains and Pacific Coast States various rodents are enormously destructive to cultivated crops and native forage. They are so numerous as to be serious competitors of livestock on hundreds of millions of acres of range and forage land. They also exact an enormous toll from land devoted to field crops and orchards. In 1916 the Biological Survey of the United States Department of

Agriculture estimated the loss due to rodents in the Western States to be $300,000,000, about equally divided between forage and cultivated crops. The extension service in various States has cooperated with the Biological Survey in organizing campaigns for the control of these pests. The principal rodents involved are prairie dogs, ground squirrels, jack rabbits, pocket gophers, meadow mice, kangaroo rats, and moles. Some of them, particularly prairie dogs, ground squirrels, and jack rabbits, are widely distributed.

The Biological Survey has developed poisoning and control agencies and has one or more State respresentatives in most of the Western States. Both State legislatures and county commissioners in many of the States make appropriations for the purchase of poison and for other expenses incident to controlling rodent pests. The county agricultural agent's office has been the distributing agency for apportioning the poison, and the agent has acted as local leader in organizing counties for effective work. The Biological Survey assumes the cost of operations on Federal lands, and the State and county appropriations, which amount to $500,000 annually, are for the work on State and privately owned lands.

In organized campaigns against the prairie dog and ground squirrel since 1916, 12,000,000 acres of Federal land and 105,000,000 acres of State and private lands have been poisoned and a large percentage of the animals destroyed. In 1924 alone 833 tons of poisoned grain were distributed, and in addition 100,000 pounds of carbon bisulfide and 175,000 pounds of calcium cyanide were used for fumigating burrows. Sixty-six thousand farmers and stockmen cooperated. The estimated saving amounted to $4,000,000 for 1924 and to a total of $72,000,000 since work started on a large scale in 1916. Usually from 75 to 95 per cent of the prairie dogs and gophers are killed at the first poisoning. Exterminating the survivors is more difficult. However, 11 counties in three States are reported to be free from these pests.

Jack rabbits at times are very troublesome, as they eat not only green forage but in winter attack stacks of alfalfa. In addition to poisoning campaigns county agricultural agents have assisted in organizing hundreds of drives or hunts, during which hundreds of thousands of these animals have been killed. In two drives in Kansas in 1924, 10,000 rabbits were killed. In Utah in 1924, a poison campaign netted 340,500 rabbits.

Work with mice, rats, and moles has followed the same general lines, but has had more local application. In 1922 and 1923 an invasion of field mice threatened the great orchard district in the Yakima Valley, Wash. Campaigns were organized, in which 853 orchardists cooperated, and 34,270 acres were poisoned with 53,180 pounds of poisoned bait. The trees were saved.

Without the county agricultural agent continuously on the job with an organized extension force the success that has attended these efforts would have been impossible or accomplished at enormously increased expense. Reports of county agricultural agents for 1918 to 1923 show that in the Western States the agents have worked directly with 310,852 farmers, involving a total of 62,674,280 acres in rodent-control work.

FRUIT AND VEGETABLES

In horticulture county agricultural agents have exerted their greatest influence in obtaining a much wider practice of spraying for the control of insects and plant diseases. This is particularly true in connection with home orchards and gardens, though much help has been given to specialized or commercial growers. Almost every fruit and vegetable crop has been affected, and the insect troubles and plant diseases have varied in different parts of the country, and with different crops. In the aggregate the effect has been country-wide, though the immediate results have been local.

Potatoes have been most universally affected, and the projects have been in connection with both insect pests and disease trouble; particularly the production and use of disease-free seed have been given great attention. Pennsylvania has advanced from twenty-fifth to fifth place in potato production in the past 10 years, because of disease-free seed and improved spraying methods. In 1918 less than a dozen power potato sprayers were being used in the State. In 1924 there were 2,500. Tests have determined the best producing varieties, and campaigns have been conducted to standardize them, and to promote the use of seed from disease-free plants. Southern New England has come very largely to depend on Maine as the source of seed. The stage has now been reached where the majority of potato growers in this area use only northern disease-free seed. This has increased the yield of potatoes from 25 to 75 bushels per acre. In Connecticut alone it is estimated that this project has increased the income from the potato crop by $450,000 annually.

An important influence growing out of this varietal standardization and disease-control work has been the establishment of the seed-potato industry. Many of the large surplus potato-producing districts have found it better to depend on outside sources for seed. Seed certification is not primarily an extension project, but the educational work showing effect of producing pure seed in one locality and the use of it in another is a proper extension project. The functions that should be assumed by the growers, those that are properly a part of the control or police work of the State, and the relation of extension forces to certification, have been better understood since farmers have recognized that the county agricultural agent should not be expected to engage in inspection, regulatory, or police work.

Pruning probably ranks next to spraying and varietal standardization in order of importance. Extension work in pruning has been carried on with trees and vines and with both deciduous and citrus fruits. In the Pacific Coast States a change from the former severe or short pruning methods to a modified or long pruning system is so apparent as to change the appearance of the landscape in many of the intensive fruit districts. In California particularly, as the result of six years' intensive work by county agricultural agents, 75 to 90 per cent of the deciduous fruit growers in many of the districts have changed their pruning system, with increased financial returns to the producers estimated at more than $500,000 annually. The effect of this work is apparent even to the casual traveler going through these districts. The success that has attended this project illustrates how quickly a new and advantageous practice can be established when the test, demonstration, and campaign stages follow each other in organized sequence with a permanent local agency continuously at work.

MAJOR INFLUENCES IN SOIL IMPROVEMENT

TERRACING

When one sees the murky, sediment-laden waters of our big rivers, such as the Mississippi and Missouri, with broad bottoms and deltas built up from their overflow and deposits, and stops to realize that these billions of tons of sediment came originally from the loose topsoil of the area drained, he appreciates the great amount of soil waste constantly going on. If this waste is viewed from the eroded field itself, it is realized that although the rivers may receive no carrying charge the farmer pays an enormous freight. This is a freight charge which can be reduced only at the point of origin.

In China, Japan, and other countries where the pressure of the population is great, and every foot of land must be utilized to its fullest extent, terracing has been used for centuries. It is more or less characteristic of the landscape. Only within recent years has the terrace had an agricultural expression in America. It came as a result of attempts to stop or decrease the large soil loss on the single-crop humus-depleted lands of the Southern States. A type known as Mangum terrace was designed especially to meet these conditions. It can be easily and cheaply constructed and does not require the services of a professional engineer. In almost every county in the Southern States terracing has been a standard project during the past 10 years (fig. 8). The county agricultural agent is usually equipped with terracing tools, including a land level. He runs the lines of demonstration area, and the farmer with the help of his neighbors constructs the terrace. In this way a number of men are trained to do this work at one time, who can usually lay out their own terraces afterwards.

Within the past few years the work has spread into Ohio, Indiana, Illinois, Missouri, and other States. Reports from the Southern States show that during the 10-year period 166,577 terracing demonstrations have been held, involving a total acreage of 4,226,483 acres. This is a project the effect of which can be seen from the car window of almost any railway traversing the Southern States. It gives to the landscape an aspect strikingly in contrast to the washed and gullied fields observed a few years ago. Much, however, remains to be done and the wasting field is yet too often a part of the picture.

CLEARING CUT-OVER LAND

In Michigan, Wisconsin, and Minnesota, in the Pacific Northwest, and in the Southern States are large areas of cut-over or stump lands much of which can be used only for pasture. If such land can be cultivated at all it is only with very great difficulty, as the use of large tillage or harvesting machinery is impossible. Individual effort toward clearing is difficult, expensive, and slow. The county agricultural agents have developed community interest in the purchase and use of stump-pulling machinery, have introduced methods of burning, and more recently the use of explosives. Since the war, the Department of Agriculture has obtained from the War Department a large quantity of surplus war explosives. These have been distributed, chiefly through the State extension directors, to farmers for use in clearing their land of stumps and stones. The county agricultural agents have charge of the individual allotments and of conducting demonstrations in the use of these explosives.

Manufacturers have been encouraged to produce explosives that could be economically used by the farmer for land clearing. County agricultural agents have formed groups of interested farmers, who, by pooling their requirements, could take advantage of car-lot shipments.

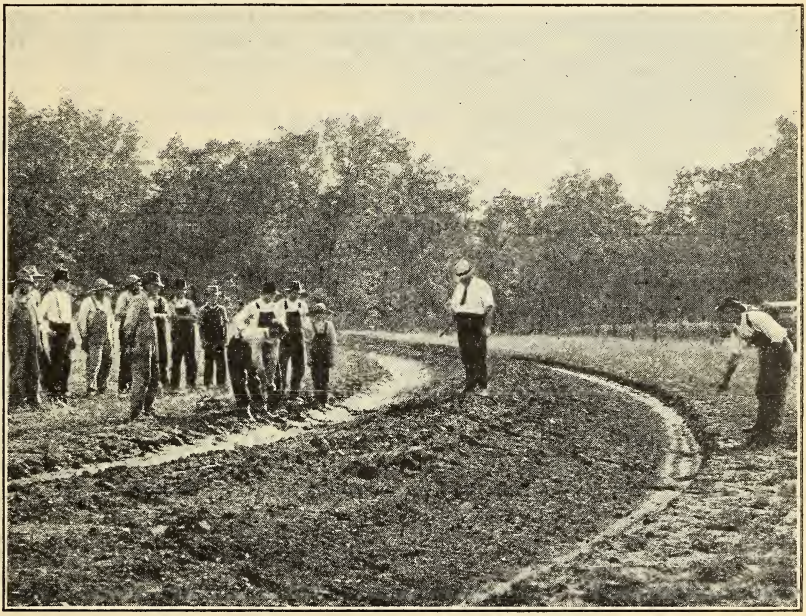

Fig. 8.—Farmers helping the county agricultural agent to construct a terrace which will stop soil waste. After learning the principles of terracing at such demonstrations, farmers construct their own terraces. In the Southern States, where terracing has been a standard project in almost every county during the past 10 years, country agricultural agents have conducted 166,577 demonstrations involving 4,226,483 acres

In the Southern States alone the stump land cleared through demonstration work from 1915 to 1922 amounted to 669,696 acres. No data are available from other sections of the country previous to 1923. In 1923, 248,405 acres of land was cleared in the United States under the supervision of the agents, of which approximately 100,000 acres was in the Northern and Western States. Judging from this and from the individual reports of certain States, it may be conservatively estimated that more than 1,000,000 acres of land has been cleared in the past 10 years as a result of demonstration work.

DRAINAGE AND IRRIGATION

Drainage has been an important extension project. Not only swamp lands but also the wet areas within cultivated fields present drainage problems. If these wet places are plowed at the same time as the remainder of the field, their productive capacity is greatly reduced and cultivation difficulties increased. If the field is left until the wet areas are ready, the farm work is greatly delayed. Considering the low yields, incidental loss, and excess labor, these areas are in effect lost acres. The farmer would be better off if they were not included in his cultivated area. Irrigated lands almost invariably tend to become water-logged and often pass out of use for cultivated crops. The county agricultural agents have in all of the States put on drainage demonstrations affecting some of these conditions. During the 10 years a total of 31,362 drainage systems have been planned and installed covering a total area of 5,846,837 acres.

Although Government and State irrigation projects cover a large territory in the Western States, thousands of farmers are dependent on private or community systems for irrigating their lands. Assistance in connection with the planning of these farm or community systems has been an important phase of extension work in the Rocky Mountain States and westward. Such work usually calls for the services of an expert engineer before the actual construction begins, but a vast amount of educational work must be done in which the county agricultural agent takes the part of a leader, particularly in estimating the potential production and its relation to cost estimates. Since 1914 a total of 4,066 irrigation systems have been planned and adopted involving 4,365,380 acres which have been brought under irrigation either by individuals or through small companies acting on the advice of the county agricultural agent. Table 3 gives the total land brought under cultivation through terracing, land clearing, drainage, and irrigation as a result of county agricultural agent work. This total of 15,961,364 acres is a new acquisition, a new national asset, as much so as if it were added to the country's territory by purchase or conquest.

TABLE 3.—*Area of land brought under cultivation through terracing, land clearing, drainage, and irrigation, 1914 to 1923, inclusive, under the supervision of county agricultural agents.*

Item	Acreage
Land terraced	4, 866, 290
Stump land cleared	908, 853
Land drained	5, 821, 498
Land irrigated	4, 364, 723
Total	15, 961, 364

These figures are significant and noteworthy when it is considered that the total equals an area of five States the size of Connecticut or two countries as large as Belgium. It is 150 times as large as the Virgin Islands, for which the United States paid Denmark $25,000,000. If this reclaimed area were a cornfield producing the average yield per acre of the United States, it would produce nearly 500,000,000 bushels. That these 15,961,364 acres are scattered in small areas in 2,000 counties in 48 States increases rather than decreases their value.

MAJOR INFLUENCES IN LIVESTOCK WORK

The county agricultural agent is not a veterinarian, and the treatment of sick or diseased animals as a service does not come within the scope of his official duties, yet it happens that his largest contribution to livestock improvement has been in connection with livestock disease work. This does not mean that he has personally treated any considerable number of animals or in any large way usurped the function of the local veterinarian, nor has he acted as a police officer in enforcing quarantine measures. Quite the reverse. In any effective disease-control campaign, even if the police powers of the State are back of it, there must precede, or at least accompany it, an educational campaign to acquaint the people with the following:

(1) The aggregate amount of the losses sustained.
(2) The public policy demanding quarantine or police measures.
(3) The practicability of control methods proposed.
(4) The interest of the individual farmer in cooperating.
(5) Demonstrations of the effectiveness of the procedure advocated.

In other words, a favorable public sentiment and cooperative attitude must be developed. Once the farmer's interest is aroused the control agency can operate effectively and successfully. The farmer is not interested in the differentiation of duties of the various public agencies concerned, and the boundary lines between education, demonstration, service, and police measures are often difficult even for the various agents themselves to determine. What is demonstration from the standpoint of one may look like service from the standpoint of another. Some work has been done by the extension agents that was unquestionably outside of their province, although in the aggregate such cases have been few and individual. Such as have occurred have served to define the proper field of extension service and to bring about the desired coordination of effort.

TICK ERADICATION

The Southern States, previous to the Civil War, formed an important cattle-producing area. The end of the conflict left the South stripped of its cattle. Cattle introduced from the North during the reconstruction period were victims of murrain, or Texas fever, carried and spread by the common cattle tick.

In 1906, when the Federal Government began organized eradication work through the Bureau of Animal Industry of the United States Department of Agriculture, the area infested was 741,515 square miles, and it was estimated that the tick was effecting a loss of $40,000,000 annually to southern farmers. The eradication or control method was comparatively simple, consisting of spraying or dipping the affected animal in an emulsion of crude oil or an arsenical solution at 14-day intervals throughout the season. From a variety of causes the farmers were not always favorable to the quarantine or eradication methods. In changing this attitude and obtaining a cooperative spirit, county agricultural agents have been most useful. Through addresses explaining eradication and by constructing demonstration dipping tanks, they have done much to make possible the success that has attended this work.

When tick eradication was undertaken in 1906, 975 counties were included in the quarantined territory, of which 693 had been released by 1923. This was good progress. The part the county agricultural agent has had in it is indicated by the 12,225 dipping vats built directly through his influence since 1915. According to the reports of the agents, 32,570,379 head of cattle have been dipped in these vats during the 10-year period. The Bureau of Animal Industry's report for 1923 states that more than 31,000 vats were in use for official dipping in 1923 and that 74,937,657 cattle were dipped. The county agricultural agents have extended proper and effective cooperation in this work and have kept well within the proper limitations.

HOG CHOLERA

The fight being waged against hog cholera is just as important as the campaign for tick eradication. In the 20-year period from 1895 to 1914 it is estimated that the annual loss from this disease ranged from $27,000,000 to $78,000,000. Ninety per cent of all the hogs that die from disease are destroyed by cholera. No part of the country has been altogether free from it. In 1905 Doctor Dorset, of the Bureau of Animal Industry, discovered a serum rendering hogs immune from the disease. It was not until 1914 that the Department of Agriculture had sufficient funds for demonstrating to farmers how they could protect their herds from the scourge. In this demonstration work county agricultural agents have been actively engaged. The objectives of the extension service have been:

(1) To acquaint farmers with the nature of the disease and how it is transmitted.

(2) To encourage the observation of proper sanitary measures.

(3) To demonstrate the effectiveness of the serum treatment so that the farmer may immunize his own hogs in communities where the services of a competent veterinarian are not available.

Occasionally, and particularly in years when the disease has been severe, a few of the county agricultural agents exceeded the limits of the demonstration and became, at least temporarily, "hog doctors," going from farm to farm systematically immunizing herds. Such practices, although exceptional, have been properly a source of complaint by professional veterinarians and have resulted in dissatisfaction from the standpoint both of the farmer and of the extension service. The great majority of county agricultural agents, however, have kept well within their proper field of education and demonstration. A total of 12,012,390 hogs have been immunized under the direction of the county agricultural agents during the 10-year period.

Hog cholera continues to cause great losses, and for a variety of reasons its complete control is difficult, if not impossible. The losses, however, have been greatly reduced. The number of hogs lost by cholera has decreased from 6,064,470 in 1913 to 2,774,033 in 1922, and the losses per 1,000 from 118.9 in 1913 to 51.3 in 1922.

The Bureau of Animal Industry and the various State agencies cooperating are in control of this work and responsible for the methods followed, which have varied considerably in the various States. County agricultural agents have rendered effective assistance in reporting outbreaks, in obtaining local cooperation, and in preliminary educational campaigns.

TUBERCULOSIS

This disease affects cattle, hogs, and poultry, and the presence of the disease in these animals and fowls contributes to human infection. It is estimated by the Bureau of Animal Industry that had tuberculosis in livestock been allowed to continue at the same rate that it progressed from 1907 to 1917, by 1937 it would have brought about a loss to livestock producers of $100,000,000 annually.

In 1917 the tuberculosis eradication division of the Bureau of Animal Industry was formed and systematic effort was begun to decrease the ravages and minimize the danger from tuberculosis. This work has been done by the inspectors of the Bureau of Animal Industry in cooperation with State agencies under the provisions of various Federal and State laws. Responsibility for the plan of control and the methods used rests with these agencies.

The county agricultural agent has had a most important part in the educational campaign which must precede any effective clean-up or eradication work. At meetings and lectures and through the use of lantern slides and motion pictures he has called attention to the dangerous situation existing. He has helped to create public sentiment for united action by communities and counties in establishing accredited herds and disease-free areas. Rarely has the agent himself administered the tuberculosis test. This is properly the work of the State and Federal authorities charged with the responsibility of the eradication program. However, directly through the influence of county agricultural agents a total of 5,638,468 animals has been tested. At the close of the fiscal year 1923, 28,536 herds, comprising 615,156 cattle, had been officially accredited as free from tuberculosis and 81 counties had been declared free from the disease.

BLACKLEG

Blackleg has long been a source of great loss to cattlemen. It is confined largely to cattle ranges of the West, though often confused with anthrax prevalent in the Southern States. The disease affects young animals, and at times the loss amounts to 10 per cent of the annual calf crop. It can be controlled by preventive vaccination, which reduces the loss to less than one-half of 1 per cent. The United States Department of Agriculture began the distribution of vaccine to stockmen in 1897 and continued to do so until 1922, when its use had become extensive and commercial sources had been developed. But even yet considerable prejudice exists against its use, and many stockmen rely on less effective or even ineffective and dangerous remedies. The county agricultural agents have conducted many demonstrations in the use of Government vaccine and have acted as distributing agencies for the department. A total of 4,801,764 animals has been vaccinated either by the agent directly in demonstrations or by farmers under his supervision, the operation being simple and not requiring expert skill.

HERD IMPROVEMENT

The basis of herd improvement has been the introduction of purebred sires and the elimination of scrub or grade animals from the head of the herd. (Fig. 9.) Without favoritism toward particular breeds, influence has been exerted to get communities to adopt the same breed and to organize breed associations. The work has been carried on with all classes of livestock. The county agricultural agent does not act as the business agent of farmers in the purchase of purebred or other livestock, although he may advise regarding the type of animals, points to be observed, production records, and similar facts. On rare occasions he may accompany a group of farmers and act as their adviser in the selection of animals which are being introduced into a new area for demonstration purposes. Table 4 gives the number of purebred and registered animals procured by farmers acting on the advice of the county agricultural agent.

FIG. 9.—Farmers observing points of a purebred dairy bull. Herd improvement through the introduction of purebreds and the elimination of scrub grade animals from the head of the herd has been one of the principal extension activities in livestock. Through the efforts of county agricultural agents during the 10 years, farmers have procured thousands of purebred and registered horses, beef and dairy cattle, sheep, goats, and hogs. The beneficial effect which the introduction of 811,769 such animals has had upon the livestock industry has been most marked

TABLE 4.—*Purebred and registered animals procured on advice of county agricultural agents, 1914 to 1923, inclusive*

Kind of animal	Number procured
Horses:	
Stallions	4, 267
Brood mares	16, 714
Jacks	2, 210
Beef cattle:	
Bulls	45, 324
Cows	79, 941
Dairy cattle:	
Bulls	61, 385
Cows	170, 088
Sheep and goats:	
Rams	32, 674
Ewes	44, 145
Hogs:	
Boars	145, 159
Sows	209, 872
Total	811, 769

The beneficial effect which the introduction of 811,769 purebred animals has had on the livestock industry is incalculable. Many purebred herds have been established which have become centers of community improvement. County-wide scrub-bull compaigns have been conducted for the purpose of eliminating such breeding animals. As a result of this many counties have only purebred animals. An interesting example of the successful results of one of these campaigns is furnished by a county that conducted a purebred-sires campaign for three consecutive years. At the end of this time it was decided to celebrate the progress by holding a "scrub-bull funeral." The work, however, had been done so completely that not a single such animal could be found in the county, and authority had to be obtained from the State commissioner of agriculture to bring one in from an adjoining State.

DAIRYING

Projects incident to dairying have been carried on in all the States. Two points of major influence have already been mentioned in paragraphs relating to tuberculosis control and the introduction of purebred sires and high-producing cows. The purchase of such animals in certain regions has been a part of a broader program than that of herd improvement; that is, it has been incident to the establishment of the dairy industry or of dairying as part of the scheme of farm management. This has been particularly the case in the Southern and Western States. In both of these groups of States a large number of farms had no milk cows and no fresh milk was used in the family diet. A large quantity of dairy products was shipped into some of these States. Farmers in neither section had a favorable attitude toward dairying as a business. One section was a single-crop region where the farm income came largely from one cash crop and the farm people were accustomed to buy rather than produce food consumed by the family. The other was a range county with an inherited prejudice against the kind of labor incident to dairying, particularly milking.

The introduction of dairying into these regions provided a better balanced agriculture and a wholesome and needed addition to the family food supply. The farmers were largely unacquainted with dairy management or the qualities to be looked for in a dairy animal. In one region the standard or popular conception of a milch cow was a small, ungainly cow of uncertain breeding, probably tick infected, producing a very small quantity of milk per day. In the other region it was a range cow that had lost her calf and which was staked out or kept in a small pasture.

In introducing dairy animals into these regions the county agricultural agent often assisted directly in the purchase of foundation stock. The success of the whole enterprise depended on a right start. The feeding, care, and management of dairy stock and the handling and disposition of dairy products also had to be demonstrated. The situation in these regions was altogether different from that existing in the East or Middle West. Important centers of dairy production existed in both the South and West before 1914.

There is no doubt that this dairy introduction work has had a great influence. The number of dairy cows in the Western States increased by 392,000 from 1914 to 1923 and in the Southern States by almost a million during the same period. The percentage of increase was somewhat greater in both regions than in the country as a whole. In the further development of dairying, the cost of production, freight rates, and the relation of production to demand need to be kept carefully in mind. Cow-testing associations have been encouraged generally throughout the country. The agents have promoted the organization of 3,280 such associations, and 65,917 cows have been discarded as a result of testing.

Silo building is another important project having particular relation to dairying. Usually this project has been active in counties having few or no silos previous to the appointment of the agent. In all a total of 69,806 demonstration silos have been constructed under the direction or supervision of county agricultural agents, which have resulted in the construction of hundreds of others. All types of silos applicable to various localities have been demonstrated. In the West the pit and trench silos have proved not only cheap but thoroughly practical. In the Central, Southern, and Eastern States some form of upright silo has usually been constructed.

POULTRY

Poultry is almost universally kept by farmers, whose flocks vary in size from a few fowls kept for home egg supply to enough to provide an important secondary source of income. Poultry projects have been numerous and cover a wide field, including breeding, feeding, care, and management. An important phase has been in relation to proper housing. Many agricultural colleges have developed a model or standard house for their particular climatic conditions. The only report covering this phase of the work is from the Southern States. In these alone 31,000 model poultry houses have been constructed following the plans furnished by the agent.

The introduction of standard-bred poultry to replace the mongrel types commonly kept has often resulted in whole communities adopting a uniform breed. A great number of poultry diseases have been brought to the attention of the agent. Proper and economical feeding rations have been demonstrated. Egg-grading and poultry-dressing and packing schools have been conducted. The most universal project has been poultry culling. By means of these rather simple demonstrations hundreds of thousands of farmers have been taught how to cull the hens that are poor producers. Of 732,916 farmers who are reported to have changed their poultry practices because of demonstration work, the greater number of changes have probably been due to culling work.

MAJOR INFLUENCES IN FARM MANAGEMENT AND MARKETING

Extension effort by the county agricultural agents has been chiefly directed to the improved processes within farm enterprises rather than in determining the proper enterprises or their relations. This has been necessarily the case. Extension work found the farmer already on the land with his farm-management scheme well established. It was relatively easy to demonstrate the beneficial effects resulting from the application of spray mixtures, plant-disease or insect control, improved varieties, improved cultural practices, effect of applying lime or fertilizer to the soil, and other improved practices. It is not so easy to demonstrate a reorganization of the farm and a more advantageous relation of its enterprises. To effect such changes the farmer takes big risks. It may involve wide departures from his ordinarily established crop-rotation scheme, the kind or amount of crops produced, or the kind, breed, or number of livestock kept. Often these factors may be those that chiefly influence the net profit from farming, but the adjustment must be and should be gradual.

County agricultural agent work in the Northern and Western States was developed in the Office of Farm Management of the Department of Agriculture. C. B. Smith, immediately in charge of this work, although recognizing the difficulties of demonstrations in farm management and the slowness of any future progress in this direction, felt that if the county agricultural agent had a background of correct farm-management principles as applied to the conditions in his county he might better counsel and guide farmers in the work being undertaken. He felt that unless the agricultural agent had such a yardstick he might easily find himself going in a beaten circle of more or less apparent demonstrations. Consequently, county agricultural agents were encouraged to make farm analyses and to discover the successful farms—that is, the ones making money—and to use the farm-management principle as illustrated on these farms as a means of bringing the average of the community up to a standard.

Such a procedure seemed safe, and this idea has done much to prevent hazardous expeditions into uncertain fields. It is a safe assumption that in every settled agricultural area with an established agriculture some farms will have the best farm-management scheme for the majority of the farmers in the community to follow. The problem is to find these farms. In the development of farm-management demonstration work various methods have been followed to locate most correctly these farms and to apply most effectively the lessons they teach. Farm surveys, farm bookkeeping, cost accounting, and farm-account schools have been some of the methods used. In the 33 Northern and Western States during the years 1915 to 1923, inclusive, 351,422 farm account books were distributed, and 23,362 farmers in some way modified their practices by record keeping.

The chief value of this work has been in giving the county agricultural agent a proper perspective. Doctor Smith stated his philosophy of this work at the first conference of county agricultural agent leaders, held at Washington, D. C., in December, 1913, as follows:

> Relative to the work of the county agent we believe his first task with at least 50 per cent of the farmers is to help improve their condition financially. That type of demonstration work should be done which tends to increase the net income of the farm at the end of the year. The profits of the year's business of the whole farm are the essentials rather than the production or profits from any single enterprise on the farm.

Consideration was also given to the disposition of the farmer's products and the purchase of his supplies. Work of this nature had been done both in the Southern and in the Northern States previous to the enactment of the Smith-Lever law, particularly in the cooperation of farmers in the purchase of commercial fertilizers, chemicals for home mixing of fertilizers, and farm seeds and supplies. Farmers' exchanges were organized for the purchase, sale, and trade of farm products in communities and counties. Some of these exchanges organized in 1913 are still doing business.

The authors of the Smith-Lever Act had in mind that assistance would be given the farmer in handling and selling his products as well as in producing them. This is evidenced by the following quotation from the report of the Agricultural Committee reporting the bill to the House:

> To teach the farmers the best methods of increasing production is exceedingly important, but no more vitally so than is the importance of teaching them the best and most economic methods of distribution. It is not enough to teach him to grow big crops. He must be taught how to get true value from these big crops else Congress will be put in the attitude of regarding the work of the farmer as a kind of philanthropy. The itinerant teacher or demonstrator will be expected to give as much thought to the economic side of agriculture, to the marketing, to standardizing and grading of farm produce as he gives to the matter of larger acreage yields.

If applying farm-management principles is more difficult than applying principles relating to improved processes, then the proper counsel in regard to appropriate marketing procedure or organization is even more difficult, as even less-known facts are available upon which to base sound advice. A considerable measure of disaster has followed ventures by farmers into new marketing fields. The right of the county agricultural agent even in this field was seriously questioned by established business agencies. It was in reply to such a protest that Secretary of Agriculture David F. Houston in 1914 established the principle that has since been recognized as governing the relation of the county agricultural agent to the purchase of supplies and the selling of produce. Secretary Houston said:

> You commend the work of the department as enlightening the farmer in a thousand ways, but protest against any effort to carry to him information as to business methods or organization which will enable him to buy and sell to advantage, appearing to think that he should be enlightened only in the field of production.
>
> It is a legitimate and proper part of the work of this department, in fact its duty, to furnish farmers with information which will enable them to develop greater efficiency in all respects, including the securing of their supplies and the marketing of their products. We have reached the point where larger crops do not mean necessarily larger net returns to the producer.
>
> The farmer's business education must now be put on a par with his education in production. This requires organization. Many middlemen are a necessity in exchange, but the department takes the broad ground that the farmer should pay the middleman for service and for service only. In the event that he can serve himself more cheaply than the middleman is serving him, if he can install his own business machinery, arrange to pay cash, or furnish his own credit, he should do so. The middleman must consent to meet him on this thoroughly sound basis or lose the farmer's trade.
>
> I trust that I have made clear the position of the department in reference to all of its work of assisting the farmer. In no case is any actual business whatever transacted for him individually or collectively. Whenever and wherever farmers through machinery of their own are developing greater agricultural or business efficiency, we shall use the means of education at our disposal with perfect freedom in bringing the methods of such organizations or communities to the attention of others. In the carrying out of this policy we endeavor at all times and in all matters to act in perfect fairness to all interests concerned, whether producer, middleman, or consumer.

As an indication of the attention which county agricultural agents have given the subject of marketing, records in the Northern and Western States show that in 1915, 17 per cent of the agents gave assistance in connection with marketing. The percentage by years since that time has been as follows: 1916, 22; 1917, 24; 1918, 30; 1919, 37; 1920, 61; 1921, 63. No comparable figures for 1922 and 1923 are available.

The amount of annual business of cooperative associations organized on advice of agents increased from $3,764,983 in 1915 to $272,191,124 in 1921, and the estimated saving incident to such marketing from $275,375 in 1915 to $14,297,199 in 1921. These figures are indicative of the increasing importance this work has assumed. The county agricultural agents in the Southern States gave much attention to this form of extension work but no report data are available. The period of deflation following the war and the falling prices producing distress and discontent among farmers gave special impetus to this kind of work. During this time many agents have gone beyond the limit of propriety as designated by Secretary Houston, that: "In no case is any actual business whatever done for him [the farmer] individually or collectively," with resultant dissatisfaction and embarrassment to both farmers and county agricultural agents. In this marketing work the ethical and proper official relation of a publicly paid agent is clear.

In a crop demonstration a farmer may try out a new variety of comparison with the one he has been growing, and even if the new variety should prove less well adapted to his conditions he will suffer but a small loss; but in changing his accustomed method of marketing he risks his whole crop or the product of his entire farm. It is a money matter, and the farmer alone should determine so vital a matter. The county agricultural agent helps the farmers in bringing to them expert assistance, in relating the experience of others under similar circumstances, and in telling what seem to be the essentials for a successful venture under their particular conditions; but he does not assume the responsibility of management or act as the farmer's business agent either in the purchase or sale of produce. For the most part the county agricultural agent has acted as a stabilizer and has quite often found it necessary to show that the elements of success were absent as to show that they were present in a proposition. He has been primarily concerned with the organization of small local cooperatives or other marketing organizations, such as livestock shipping associations, wool pools, creameries, seed associations, and fertilizer associations. At times, however, he has helped materially in campaigns for larger commodity and State marketing associations, such as the Dairymen's League in New York, and the various cotton associations in the Southern States.

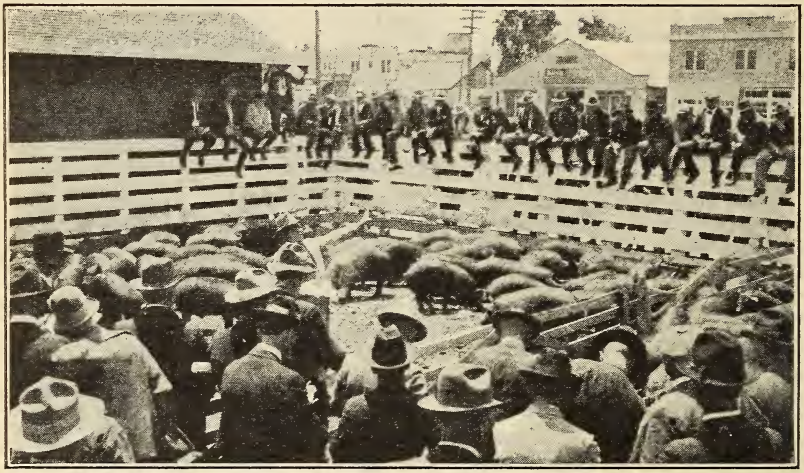

FIG. 10.—A California livestock auction sale conducted with the advice and help of the county agricultural agent. Extension agents, especially in recent years, have met the needs of thousands of farmers by devoting much time and effort to making available data and expert advice that could assist farmers in the solution of their economic problems

CALIFORNIA HOG AUCTION SALES

Hog auction sales in California afford an excellent example of the relations of agents to marketing enterprises (fig. 10). These sales were started in 1916 by G. C. Kreutzer, county agricultural agent in Kern County, and were modeled on a plan that he had seen successfully worked out in Australia. The plan was to pick a small town in a county where market facilities were available, procure enough hogs from producers of the district, to put on a sale, set the date for the sale far enough in advance so that the packing concerns could be notified, and have buyers on hand, obtain an auctioneer, and then advertise the sale to each farmer in the county, who could thus see how it worked. The plan proved so successful that other counties in the valley adopted it.

However, many conflicts in sale dates resulted from counties holding sales independently. To obviate this difficulty County Agent C. M. Conner, of Tulare County, suggested a plan of organizing counties and auction sales, so that more buyers could attend each sale. This was done in Visalia in 1918, when the Farm Bureau Marketing Association was organized. A secretary-treasurer and general manager was employed who had had 13 years' experience in the Chicago stockyards, and who understood the language of the hog buyer and marketing conditions. The business of the association has increased so rapidly that an assistant manager and official grader have become necessary.

At the first meeting of the board of directors it was decided to charge each county entering the association $500 guarantee, and the farmer a commission of 1½ cents on all hogs sold through this association. This commission charge has fluctuated, depending upon the surplus in the treasury. Before the hogs could be weighed and graded it was necessary that each town holding the sale should have weighing scales. In several towns the farm center bought the scales.

This association is unique in that it does not have an iron-bound contract. During the years of its operation it has sold hogs valued at nearly $6,000,000 for the farmers in the San Joaquin Valley, requiring only that to sell through this association the farmer must be a member of the farm bureau in his own county. Before the organization of this association it was almost impossible for a farmer to raise a few hogs and market them at a profit. The large hog-raising concerns could interest buyers from packing houses, and obtain a price for their product. Buyers were not interested in the small producers who had only 10 to 15 hogs ready for market each month. Consequently the small producer lost his profit because of poor marketing facilities.

During the past six years 1,008 sales have been held, at which 273,308 hogs or 3,201 carloads, valued at $5,780,200.62 were sold. All hogs are graded as to weight. The association handles not only hogs but beef and dairy cattle as well. Bids are received not only from buyers attending the sale personally but from other buyers who telephone their bids, which results in keen competition.

As a result of the auction sales and other work the quality of pork has been materially improved and the gain from marketing increased. California packers have frequently testified regarding the improvement in the quality of hogs sent to market. They are reported as saying that improvement has been from 50 to 100 per cent during the past seven years.

MAJOR INFLUENCES IN RELATION TO THE FARM HOME

In recommending the Smith-Lever bill to the House the Agricultural Committee called especial attention to the provisions of the bill authorizing extension work with farm women:

> Your committee recommends to the special attention of the House that feature of the bill which provides authority for the itinerant teaching of home economics or home management. It is the first time in the history of this country that the Federal Government has shown any tangible purpose or desire to help the farm woman in a direct way to solve her manifold problems and lessen her heavy burdens. The drudgery and toil of the farm wife have not

> been appreciated by those upon whom the duty of legislation devolves, nor has proper weight been given to her influence upon rural life. Our efforts heretofore have been given to the aid of the farm man, his horses, cattle, and hogs, but his wife and girls have been neglected almost to the point of criminality. This bill provides authority and funds for inaugurating a system of teaching the farm wife and the farm girl the elementary principles of house making and home management, and we confidently believe that there is no more important work in the country than this.

It was well that the Smith-Lever Act was so broadly drawn. Agriculture as it has developed in America is both a mode of living and a business. During the long period of settlement, reaching from colonial times to the present, the establishment of a home has been the principal motive that sent the pioneers farther and farther into the West. Only slowly, some think too slowly, has the business idea in farming developed. It is by no means the predominant idea even to-day. The system of separate homes on individual farms, or living in the country instead of in farm villages, has developed an attitude of independence and farm self-sufficiency that has been both an element of strength and of weakness. For one thing, it has established between the farmer and his wife a relationship which is both business and social and rarely found in any other vocation. They are full partners. The woman is interested in every detail of farm operations and the man in the problems of house management. The farmhouse is the business office, the headquarters for the farm. To a large degree the farm is the social horizon of the farm family. Probably the farm woman has fewer social opportunities outside her own household than women in any other status. These conditions make extension work with country people a unit operation based on a community of interest between the farmer, his wife, and the family. Another thing that can not be overlooked in this connection is that in 1920 more than 260,000 farms in the United States were operated by women, as owners, managers, or tenants.

Early in the work home interests received attention by the county agricultural agents as a part of the extension problem. Soon it was recognized that a special agent was needed to give particular attention to these interests. This work had developed considerably in the Southern States before the Smith-Lever Act was passed. Since then it has been extended into the remaining States. Owing largely to lack of funds, however, more than half of the counties still have but one county extension agent. Although this is unfortunate, a considerable and increasing amount of extension work is being done on home projects by county agricultural agents through the assistance of local farm women leaders and with the help of state-wide subject-matter agents or specialists in home economics.

The joint interest of the farm family in all projects is well illustrated by the lines of work which have received particular attention during the past 10 years. These have related chiefly to the physical comforts and convenience of the farm home. The farm home was originally a protection from the elements and a place to eat and sleep. The ideals of comfort, convenience, and culture are a development of environment, education, and wealth. The county agricultural agent brought to the country people a touch of the outside world and showed that beauty was compatible with simplicity and that convenience and comfort were economic assets. So it has happened that in relation to the farm home itself house-building plans, house arrangement, water systems, sewage-disposal systems, heating and lighting systems, home sanitation, home conveniences, beautification of home grounds, production of vegetables and fruit for the home food supply have received most attention by county agricultural agents.

The number of farmhouses constructed or improved on suggestion of the county agricultural agent has been reported as a separate item only since 1920. Previous to that time the figures were included in data regarding farm buildings. During the last four years 33,288 farm homes have been either erected or improved following plans furnished by county agricultural agents, or approximately 11 per county for the counties having agents. These are to all intents demonstration houses for the benefit of the community and stand as silent sentinels of comfort and convenience. The "Better homes in America" movement is now giving reenforcement to this work. Since 1915, 115,719 front yards and back yards have been improved. Lawns, trees, shrubs, and flowers give to the owners a sense of pride and satisfaction, which is one of the greatest incentives to stability and content.

Often the farm family has felt that certain inconveniences were necessarily incident to living in the country. Among them are the carrying of wood, drawing of water, and the unsightly, insanitary outside privy. The nuisance and danger of house flies had been long endured. In combating such conditions 41,885 home water-supply systems, 46,917 lighting systems, 6,128 sewage-disposal systems, mostly septic tanks, and 79,301 sanitary privies have been installed during the 10 years. The fight on the house fly has often been made a matter of community clean-up and general sanitary improvement. In connection with this work, 382,712 homes have been screened. Although farmhouses and even communities can still be found where the people maintain their intimate associations with the fly, results of campaigns have been so widespread as to make the once tolerated house fly a recognized enemy, and the resultant improvement in health and self-respect has been incalculable.

The home food supply has been an object of much attention. "Live at home," "produce what you eat," and "home canning" projects have been features of this work in most of the States. No statistical statement can be made as to the number of homes affected; but in certain sections, particularly in the Southern States, such projects have in a most important and widespread way affected the family diet. This effect is apparent in whole communities; indeed in whole States.

County agricultural agents have done much and are earnestly interested in all work related to the farm home. Even more could have been accomplished, but no county can do its best or even satisfactorily meet the needs of the home until it has a resident county extension agent devoting full time to home demonstration work.

MAJOR INFLUENCES IN RELATION TO JUNIOR EXTENSION

Extension work with young people began with the boys' corn-club work in the Southern States, and because of its phenomenal success had become well known nationally several years before the enactment of the Smith-Lever Act. This work in the Southern States was followed by girls' tomato and canning clubs, which were equally successful. When the Agricultural Committee of the House of Representatives reported its bill to Congress, it said:

> The system of demonstration teaching, so far as it is developed in this country, has confined its activities to the teaching of the adult farmer, and in a limited way only through the boys' corn club and girls' tomato club, to the boys and girls on the farm. * * * Your committee believes that one of the main features of this bill is that it is so flexible as to provide for the inauguration of a system of ideal teaching for boys and girls.

At the outset much of the work was done in cooperation with the schools. Later the passage of the Smith-Hughes vocational education act tended to a degree to separate the field of the two agencies dealing with young people in the country.

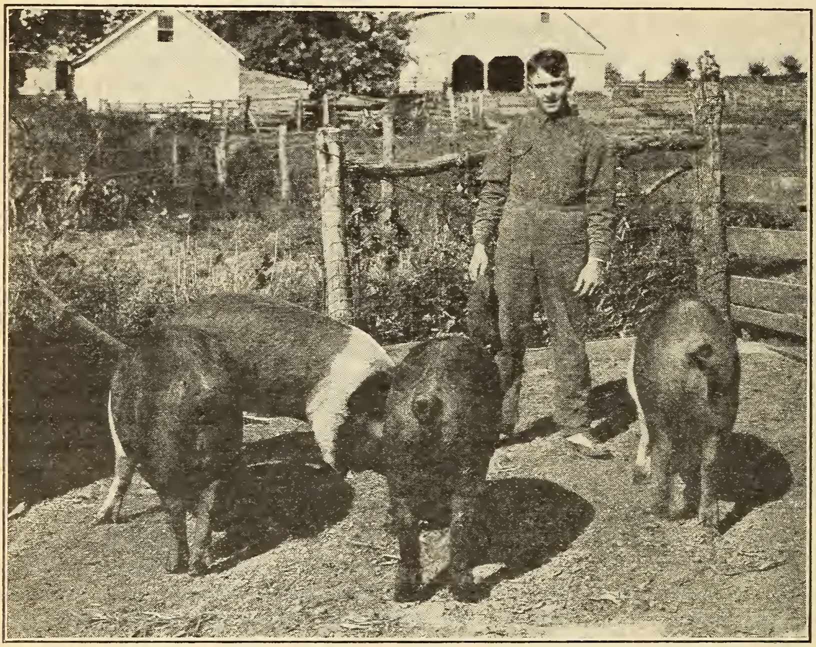

FIG. 11.—A boys' pig-club member with his Hampshire hogs. Junior extension work has laid the basis not only of farm but of community crop and livestock improvement

Junior extension as conducted under the Smith-Lever Act has as its fundamental purpose the demonstration of better practices in agriculture and home economics through interesting the young people on the farms to engage in such demonstration work. The work is a definite part of the program of each county extension agent. The reenforcing power of junior extension in obtaining the attention, interest, and cooperation of adults is beyond expression. No type of work in which the county extension agents engage pays such large dividends in the form of influence. The club work has expanded from attention to corn and tomatoes to almost every phase of farm crops and livestock production. The character of club work is dependent upon the kind of extension work being conducted in the county. Although demonstration is the basis of the work with young people as it is with adults, the individual benefit to the boy or girl participating is even greater than with the cooperating farmers. Their minds are more flexible and a longer potential period of usefulness is before them. Two concrete examples are included which may serve to illustrate the value of junior phases of the county agricultural agent's program.

PIG CLUB CHANGES TYPE OF HOGS IN A NEW MEXICO COUNTY

In 1919 H. P. Powers, county agricultural agent in McKinley County, N. Mex., began efforts to improve the type of hogs produced in that county. Conditions were good for swine production but the hogs were of uncertain breeding. A start was made by interesting 11 boys to take charge of the growing of a pig each under the direction of the county agricultural agent. (Fig. 11.) The best Hampshires that could be found in the United States were procured direct from the secretary of the Hampshire Breeders' Association. This club was carried on for three years, the old members supplying pigs to the new members each year.

At the end of five years every farm with a boy in the pig club was keeping purebred Hampshires. Several registered boars that have been shipped out of the county have become prize winners. The county agricultural agent reported that practically every farm raising pigs has at least one purebred Hampshire. This county is typical of hundreds of others where work with boys has laid the basis not only of farm but of community livestock improvement. This is particularly true in connection with swine production in the Southern States where extension work with young people has been chiefly responsible for the change from the piney-woods razor-back hog to the purebreds now to be found well distributed over the South.

A MISSISSIPPI BOYS' COTTON CLUB

That club boys are helping to improve farming practices was demonstrated by 96 cotton-club boys in Simpson County, Miss., in 1924, working under the leadership of A. D. Stewart, the county agricultural agent. The club requirements were:

(1) Selecting 1 acre of land well suited to cotton production.
(2) Thorough preparation of the soil.
(3) Planting pure seed of early maturing variety.
(4) Liberal use of fertilizers.
(5) Thick spacing of cotton in the drill.
(6) Clean, shallow cultivation.
(7) Cooperative ginning to keep seed pure.
(8) Cooperative selling to obtain the highest prices and paying the money directly to the boys.

These requirements, which are necessary to good cotton culture, were followed to the letter. During the season a tour of farmers and business men was conducted and each farm having a cotton-club demonstration was visited. At ginning time the gins set aside one day for the exclusive use of the boys' club cotton and the seed saved was kept pure. The 96 boys produced 91 bales. The cotton was graded and sold at auction for 1¾ cents a pound above the price at New

Orleans. As a result of these club demonstrations the whole county has been aroused to the possibilities of cotton growing when conditions are properly met. This interest is indicated by the enrollment of 564 boys for 1925.

WAR WORK OF COUNTY AGRICULTURAL AGENTS

No review of county agricultural agent work for 1914 to 1924 would be adequate that did not mention the war work of the agents. Reference has already been made to the influence of the emergency appropriations for stimulating food production by increasing the number of counties with agents. An effort was made to anticipate the maturity of the Smith-Lever Act and fill at once the remaining counties with agents as a war measure, or to do within a few months what it had been contemplated might take seven more years to accomplish. The most spectacular campaign in the history of extension work was put on to accomplish this end. The slow process of extending the work on the basis of a service needed by farmers was supplanted by public appeal to farmers to help win the war and the employment of an emergency county agricultural agent as a local leader in organizing the efforts of the farmers. Cooperation was effected in many cases with the county councils of defense, and the county agricultural agents were made almost overnight a part of the Government's war machine. So far as possible, a form of local support was maintained, but the proportion of the agent's salary paid from Government funds was greatly increased. Indeed, the entire salary was so paid in many cases. The increase in the number of agents from 1,436 at the outbreak of the war to 2,435 at its close was accomplished in the face of a strong desire of many to enter the military service. In spite of all restraint that could be brought to bear, many of them did so. In some way, however, the ranks were kept full; at times by men too old and at times by men otherwise disqualified for military service.

The new agents entered at once on the war work, and the old agents practically abandoned their regular demonstrations. Projects, plans, and programs of work were radically modified. The agents became chairmen of or participated in all sorts of local boards and committees incident to war activities. In addition to food production and conservation campaigns, they helped in the sale of Liberty loan bonds and war-savings stamps, cooperated with the Red Cross and Labor Board, and did various forms of local relief work. The question of the propriety of the activity engaged in from the standpoint of the Smith-Lever law was little considered. For the moment the traditions of the service and its limitations were alike forgotten and the agents became the focal point locally for almost every agency, National and State, public and private, seeking to reach the country pople in regard to war activities. It was part of the day's work and an important part of America's response to the call to arms.

No one identified with war work of the extension service has reason to feel ashamed of the accomplishments. American farmers did their whole share, and Assistant Secretary of Agriculture Vrooman aptly styled county agricultural agents as "captains of the commissary." They served without rank, received no medals, were acclaimed by no plaudits. Most of them smarted at being restrained from active military service, but they did a necessary work and did it well. The agricultural historian does only a simple act of justice who gives them this recognition. The problems which the wake of the war left to the extension service have already been pointed out.

SUMMARY

What, then, has county agricultural agent work done?

It has saved a great industry in the Southern States and brought to agriculture in that region a measure of stabilization and diversification.

It has brought new crops and new livestock enterprises to various regions of the country adapted to them.

It has aided in mitigating the losses due to livestock and plant diseases and to insect and rodent pests.

It has helped to conserve soil fertility and to prevent soil wasting.

It has brought about a standardization of breeds of livestock and varieties of crops.

It has in a thousand ways modified farm practices to the individual benefit of the farmer.

It has aided farmers in solving their marketing problems and in bettering their economic conditions.

In a great national emergency it was the effective agency in organizing American farmers to make their best and largest contribution to the cause of human liberty.

Important as are these accomplishments, it has done something else. It has lifted the farmer out of his isolation and brought him into working relation with his fellow farmers and his agricultural institutions—the State college of agriculture and the United States Department of Agriculture—without destroying his individualism, which is his tower of strength. It has left him still independent, still self-reliant, but more tolerant and with more community consciousness. It has developed a new leadership in country affairs. Through common counsel and mutual helpfulness among fellow farmers in connection with the simple problems of his workaday life, it has developed cooperativeness of spirit which is fundamental to the more complex, more difficult association in business. It is placing at the farmer's disposal a better organization of facts by means of which he is doing more accurate thinking, reaching safer conclusions, and living a more satisfactory life. It is not paternalism or philanthropy but organized self-help.

STATISTICS

TABLE 5.—*Expenditure of funds from all sources for county agricultural agent project for 10 years ended June 30, 1924*

[Funds for extension work are appropriated for fiscal years ending on June 30, whereas extension agents are required to prepare their annual reports for calendar years. For this reason the statement of funds expended is for fiscal years ended on June 30, and the statistics of results of work done are for the calendar year ended December 31, 1924]

State	1914–15	1915–16	1916–17	1917–18	1918–19	1919–20	1920–21	1921–22	1922–23	1923–24
Alabama	79,302.60	84,462.92	103,466.82	135,982.95	180,629.48	182,389.52	216,710.16	212,545.26	230,903.31	234,520.64
Arizona	3,320.92	9,457.70	9,782.27	23,987.94	28,061.70	31,852.46	32,051.13	47,819.45	59,304.99	58,922.38
Arkansas	78,619.31	103,630.69	116,127.54	158,867.77	207,497.34	210,585.18	193,437.25	193,490.09	192,914.66	206,101.10
California	[1] 29,940.00	57,488.30	66,129.06	163,683.99	209,993.62	214,113.18	299,655.41	202,177.96	378,821.57	373,641.17
Colorado	18,262.04	17,870.20	26,550.88	54,349.99	48,321.06	96,053.44	112,664.51	108,338.09	116,767.85	108,758.60
Connecticut	8,440.60	35,890.56	46,648.60	105,262.51	102,602.03	100,751.37	96,648.26	111,642.68	109,529.09	109,050.91
Delaware	9,286.72	8,556.68	7,789.31	11,030.67	11,372.09	13,553.27	14,131.16	15,284.15	15,556.65	15,878.09
Florida	46,404.38	43,623.49	61,766.79	91,678.94	117,945.14	87,565.80	100,939.37	103,784.42	121,118.47	120,114.38
Georgia	75,839.95	99,971.86	146,281.78	205,528.71	250,249.19	224,422.96	242,450.21	237,071.74	245,880.80	273,305.29
Idaho	8,948.64	17,659.78	12,451.57	36,799.37	57,340.44	128,771.43	140,981.03	113,783.53	102,841.68	78,637.84
Illinois	83,965.58	112,605.70	135,690.07	244,826.52	374,728.13	517,804.45	629,433.93	674,930.88	709,220.48	839,164.77
Indiana	71,719.76	84,202.39	100,018.28	229,138.42	275,886.96	222,430.14	247,760.73	287,483.30	288,414.24	283,620.49
Iowa	39,685.89	49,554.53	35,133.06	207,830.14	244,876.32	497,978.57	575,284.94	532,592.50	543,098.95	630,877.23
Kansas	32,250.82	41,494.61	57,700.12	132,974.72	155,269.30	165,104.58	351,284.95	294,874.15	260,304.84	257,132.91
Kentucky	61,343.61	67,458.00	97,564.77	142,965.03	198,923.40	143,893.79	202,469.59	211,021.10	213,221.12	234,793.25
Louisiana	56,476.33	67,312.65	86,094.78	128,582.38	151,003.78	171,437.45	153,757.24	118,607.27	176,664.84	197,199.23
Maine	8,950.11	9,854.71	18,765.62	35,597.47	39,026.40	46,281.88	48,188.72	52,378.15	54,339.85	64,792.26
Maryland	16,175.01	25,079.74	42,508.11	61,265.17	83,487.53	96,189.87	103,951.23	102,621.64	109,057.68	114,926.95
Massachusetts	54,255.66	15,561.18	74,716.77	90,092.52	87,571.51	100,320.49	90,585.01	29,786.42	101,827.68	123,931.39
Michigan	40,175.04	35,673.17	57,649.77	115,906.91	212,642.15	192,721.42	195,995.60	201,103.63	208,590.33	350,241.88
Minnesota	64,915.17	54,575.08	52,495.37	162,189.34	298,194.45	309,964.96	389,012.54	363,862.30	311,450.22	291,954.74
Mississippi	60,139.30	70,806.62	71,154.70	161,210.82	199,881.82	174,809.41	207,128.47	191,769.13	212,984.19	227,417.64
Missouri	46,401.65	44,105.73	44,088.43	110,169.68	165,445.32	182,852.24	239,821.46	253,521.21	253,783.25	220,638.04
Montana	16,712.87	29,373.16	44,291.53	91,217.29	110,450.03	95,429.82	90,805.46	148,959.86	125,682.34	130,931.88
Nebraska	33,053.20	29,426.74	46,348.25	96,816.33	126,767.11	142,307.99	237,961.82	159,854.76	204,165.84	211,941.71
Nevada			3,980.79	16,295.38	16,479.54	26,517.63	44,999.40	41,063.67	51,176.81	48,394.67
New Hampshire	11,042.15	19,016.33	27,782.99	54,211.71	51,139.65	55,893.66	70,067.11	65,359.59	46,133.48	48,052.98
New Jersey	[1] 16,934.76	31,616.91	41,934.33	66,599.84	78,886.32	92,910.77	106,081.65	105,274.84	107,657.29	108,861.98
New Mexico	7,389.25	22,544.41	33,637.34	78,768.61	91,175.29	89,200.64	80,503.08	81,185.18	84,499.05	91,979.26
New York	104,583.01	138,499.86	180,830.36	287,051.11	346,918.75	356,079.31	412,018.42	477,478.17	569,457.36	457,914.76
North Carolina	76,229.41	88,703.14	113,492.21	174,678.63	217,387.21	251,182.59	280,446.14	225,707.54	322,922.77	342,919.55
North Dakota	53,582.86	54,560.55	57,188.97	96,090.46	99,300.78	118,937.30	126,877.84	134,842.77	153,721.68	145,997.37
Ohio	2,181.67	32,006.87	60,517.54	129,526.52	211,473.68	238,301.66	262,371.38	275,741.57	283,716.75	295,433.25
Oklahoma	70,875.70	93,365.87	106,650.60	154,960.79	213,189.00	188,563.62	229,980.61	238,272.89	251,546.33	228,144.90
Oregon	36,778.53	46,172.88	50,552.06	91,797.37	118,259.97	141,592.08	156,012.00	135,634.95	126,934.82	112,727.48
Pennsylvania	25,440.79	69,399.06	99,205.82	167,719.18	184,152.25	201,697.46	182,754.55	293,406.88	248,415.15	307,218.99
Rhode Island	2,314.23	7,087.35	2,771.85	6,781.94	13,017.92	13,741.05	13,551.88	16,118.96	9,210.04	14,258.51
South Carolina	64,472.33	68,186.61	79,401.14	91,701.23	106,923.26	126,854.24	139,066.43	139,092.97	154,965.44	166,598.56
South Dakota	11,710.11	30,367.56	33,436.38	97,034.69	159,886.87	161,030.65	225,579.81	244,823.61	235,327.97	212,452.50
Tennessee	52,975.21	64,762.95	84,682.65	137,951.25	160,808.53	134,401.03	148,641.92	165,279.72	202,993.89	215,755.99

Texas	132, 801. 07	137, 941. 90	175, 714. 35	332, 811. 42	403, 697. 29	371, 750. 46	440, 642. 46	513, 682. 55	538, 888. 91	535, 298. 47
Utah	19, 538. 35	18, 447. 40	27, 164. 04	62, 168. 15	71, 472. 74	83, 533. 91	43, 612. 78	46, 187. 77	48, 057. 10	68, 833. 21
Vermont	23, 784. 90	34, 546. 26	15, 798. 64	49, 429. 96	56, 488. 68	65, 185. 37	66, 492. 56	60, 060. 41	52, 440. 24	47, 002. 15
Virginia	78, 846. 52	81, 900. 31	92, 307. 24	143, 651. 18	163, 835. 97	175, 989. 49	206, 233. 42	238, 885. 72	251, 760. 44	244, 888. 39
Washington	30, 900. 29	33, 705. 16	53, 572. 59	108, 148. 81	128, 266. 77	125, 740. 38	141, 381. 34	159, 389. 24	155, 387. 22	120, 746. 53
West Virginia	39, 617. 23	57, 421. 77	66, 886. 27	90, 113. 46	109, 734. 11	114, 628. 97	102, 831. 02	120, 048. 06	119, 142. 39	137, 253. 75
Wisconsin	33, 206. 98	41, 529. 87	57, 033. 17	121, 539. 63	128, 957. 26	133, 587. 06	140, 768. 50	159, 919. 58	203, 525. 88	219, 042. 43
Wyoming	9, 314. 76	24, 060. 60	32, 885. 36	47, 975. 82	54, 882. 76	48, 265. 77	77, 940. 84	39, 580. 14	61, 491. 50	71, 001. 03
Total	1, 949, 105. 27	2, 411, 539. 81	3, 058, 640. 94	5, 604, 962. 72	7, 124, 500. 90	7, 665, 170. 77	8, 911, 965. 32	8, 946, 340. 45	9, 625, 817. 43	9, 999, 271. 48

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[1] California and New Jersey did not keep accounts during 1914–15 so as to show expenditures by projects. The figures given are therefore only estimates arrived at after a careful study of all data available.

TABLE 6.—*Some statistical results of county agricultural agent work, 1924, white and negro*

SOILS

	Number
Farms adopting improved practices in the use of commercial fertilizer	167, 843
Farms taking better care of farm manures	49, 780
Farms using lime or limestone	34, 617
Farms plowing under cover or other green-manure crops	25, 449

CEREALS

Item	Corn	Wheat	Oats	Rye	Barley
Farms planting improved seed	42, 535	15, 084	11, 479	2, 505	2, 636
Farms practicing seed selection	44, 058	2, 173	2, 183	410	527
Farms treating seed grain for smut	----------	8, 315	9, 396	180	564

LEGUMES AND FORAGE CROPS

Item	Alfalfa	Soy-beans	Sweet clover	Crimson clover	Red alsike	Cowpeas
Farms planting improved seed	29, 669	24, 666	10, 390	1, 110	5, 623	1, 934
Farms practicing seed selection	1, 423	5, 294	1, 246	345	405	959
Farms inoculating for these crops	32, 115	26, 548	8, 117	1, 329	2, 121	847

Item	Velvet beans	Field beans	Peanuts	Les-pedeza	Pastures
Farms planting improved seed	1, 376	1, 135	1, 884	2, 730	3, 247
Farms practicing seed selection	771	579	990	1, 378	183
Farms inoculating for these crops	103	117	105	140	556

POTATOES, COTTON, AND TOBACCO

Item	Potatoes	Sweet potatoes	Cotton	Tobacco
Farms planting improved seed	25, 866	3, 092	29, 144	2, 721
Farms practicing seed selection	6, 053	2, 142	9, 033	675
Farms treating seed for disease	13, 929	2, 992	982	2, 941
Farms spraying or dusting for diseases and insects	10, 801	621	33, 846	2, 833

HORTICULTURE

Item	Tree fruits	Bush and small fruit	Grapes	Market gardening, truck, and canning crops	Home gardens	Beautification of home grounds
Farms planting improved stock or seed	8, 195	1, 975	1, 575	4, 814	2, 764	1, 593
Farms pruning	16, 099	1, 784	3, 604	1, 373	503	563
Farms spraying or otherwise treating for diseases and insect pests	18, 172	2, 044	3, 358	6, 982	5, 808	917

TABLE 6.—*Some statistical results of county agricultural agent work, 1924, white and negro*—Continued

FORESTRY

	Number
Forest or wood-lot plantings	1, 452
Farms assisted in wood-lot management	1, 064
Farms planting windbreaks	815
Farms attempting to control white-pine blister rust	418

RODENTS AND MISCELLANEOUS INSECT AND ANIMAL PESTS

Item	Rodents	Other animal pests	Grass-hoppers
Farms cooperating in control measures	65, 750	8, 316	52, 708

LIVESTOCK

Item	Dairy cattle	Beef cattle	Swine	Sheep	Poultry
Farms assisted in obtaining high-grade or purebred females	14, 465	1, 780	8, 529	2, 755	23, 774
Farms culling herds or flocks	14, 063	1, 584	2, 283	1, 025	67, 639
Animals discarded	27, 299	20, 093	14, 264	9, 442	1, 443, 851
Stallion, bull, ram, or boar circles, clubs, or associations organized	428	31	159	33	--------
Members in such circles, clubs, etc	6, 438	401	1, 199	162	--------
Breed associations or clubs organized	263	27	86	14	383
Members in such associations or clubs	6, 059	456	880	249	7, 196
Cow-testing associations organized or reorganized	916	--------	--------	--------	--------
Members in such associations	19, 354	--------	--------	--------	--------
Farms not in associations testing cows for production	34, 976	--------	--------	--------	--------
Cows under test by such associations and individual farms	321, 901	--------	--------	--------	--------
Farms adopting improved practices in the sanitary production and care of milk	44, 124	--------	--------	--------	--------
Farmers feeding better-balanced rations	43, 947	3, 957	13, 718	2, 612	46, 648
Farmers controlling insect pests	11, 025	1, 566	8, 872	2, 822	26, 249
Farmers directly influenced to test animals for tuberculosis	276, 708	78, 401	--------	--------	--------
Farmers directly influenced to vaccinate animals for blackleg	6, 392	6, 705	--------	--------	--------
Farmers directly influenced to vaccinate swine for cholera	--------	--------	31, 687	--------	--------

RURAL ENGINEERING

	Number
Farms installing drainage systems	5, 016
Farms installing irrigation systems	1, 380
Farms constructing terraces or soil dams	24, 451
Dwellings constructed according to plans furnished	1, 560
Dwellings remodeled according to plans furnished	1, 490
Sewage-disposal systems installed according to plans furnished	2, 290
Water systems installed according to plans furnished	1, 454
Heating systems installed according to plans furnished	265
Lighting systems installed according to plans furnished	1, 162
Farms clearing land of stumps or bowlders	50, 591

AGRICULTURAL ECONOMICS

	Number
Farmers keeping records	16, 835
Farmers assisted in summarizing and interpreting their accounts	8, 726
Farmers making changes in their business as result of keeping books	6, 364
Farmers advised relative to leases	11, 898
Farm-management and farm-account schools held	1, 240
Farmers assisted in keeping cost-of-production records	15, 504

TABLE 6.—*Some statistical results of county agricultural agent work, 1924, white and negro*—Continued

MARKETING

	Number
Cooperative marketing associations organized upon suggestion or with counsel of the extension service	979
Members in such associations	102, 281

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